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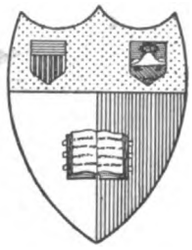

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THE BUILDING NEWS

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All Saints' Church, Basingstoke, Hants. View from S.E., with plan and exterior from the S.W. Mr. Temple Moore, F.R.I.B.A., Architect.

New Organ, St. John's Church, Peterborough. Mr. Cecil G. Hare, Architect.

St. Edmund's School, Canterbury. Alterations and Additions. View of the Whitstable Road front. Mr. Charles I. Blomfield, F.R.I.B.A., Architect.

New High School for Girls, for St. Martin-in-the-Fields, to be erected at Tulse Hill. Two plans. Mr. H. Carter Pegg, F.R.I.B.A., Architect.

Currente Calamo.

The fourth report for the current session of the Select Committee on National Expenditure has been issued as a Parliamentary Paper. It covers matters arising out of the administrative activities of the Admiralty, the Office of Works, the Ministry of Food, the Royal Commission on the Sugar Supply, and the Ministry of Blockade. It is trenchantly and deservedly critical; but we suppose nothing will ever be done to punish the wrong-doers or get rid of the incompetence it reveals! We give a summary of the section dealing with—

THE OFFICE OF WORKS,

in regard to which the committee states that evidence was given that other Government departments had endeavoured to induce people to leave the Office of Works by offering them higher salaries. It was stated that a protest was made by the Department to the Treasury against this practice, "which should never have been attempted." Furniture, etc., supplied up to February 28, 1918, to public departments cost £308,627. It would appear that the general standard of furniture provided was unnecessarily high, considering the temporary nature of the departments concerned. For example, the type of pedestal table at a cost of £10 to £13 each can hardly be considered to have been essential.

The report proceeds:—

The cost of temporary buildings has steadily risen from about 4½d. a foot cube up to, in two cases, 11d. and 12.3d. a foot cube. One of these cases was in Whitehall Place, and the reason for the excessive cost was that it was erected on the roof of an existing house; the other case was a small building in the garden of 10, Downing Street, for the use of the Prime Minister's secretaries. The excessive cost here was caused by orders that the building was to be completed in seven days, which necessitated work being carried on night and day. It would seem that a few extra days might have been given for its completion.

The comparative approximate cost of housing the staff of Government Departments in hired buildings, temporary buildings, etc., is worthy of reference, and is as follows:—Rented premises £13 per annum per person housed; commandeered ditto (other than hotels), £18 per annum per person housed; hotels, £30 per annum per person housed; temporary buildings, capital charge of £25 per person.

Seventy five acres of grass land were ploughed up in Richmond Park and sown with oats. They produced a crop of 79 quarters, or about one quarter to the acre. The cost, including seed and allowing one-tenth cost of fencing and one-twentieth cost of reaping machine, was £744 0s. 1d., and the value of the oats and straw £247 5s., a net loss of £496 15s. No rent has, however, been charged, but allowing £1 an acre this would increase the loss to £571 15s.

In Bushey Park 79 acres were ploughed and 270 quarters of oats produced, or about 3½ quarters to the acre; including the cost of seed there was a net loss of £11. With rent at £1 an acre the net loss was £90. It would seem advisable not to continue these experiments.

Very "advisable," we should think; but Government Departments are all apparently impervious to advice just now; and, though "it would seem" that a Prime Minister's Secretary might really have waited the "few extra days" mentioned, it is probably more than any public servant desirous to save national money would dare to suggest to autocratic functionaries!

The American Institute of Architects is taking steps toward federating the whole building industry of the United States, in order that the Government may have the most intelligent support and powerful co-operation of all the interests involved. It has invited the whole building industry to send duly authorised and accredited representatives to a conference held at the Engineering Societies Building, 25, West Thirty-ninth Street, New York City, which began at 10 a.m. on June 14, 1918, for the purpose of discussing the situation and determining the method and providing the means whereby such an organisation may be created. This invitation has been issued to national and important local organisations, which represent the building industry—whether technical, manufacturing, contracting or labour. All communications on the matter are to be addressed to the Executive Secretary, the American Institute of Architects, The Octagon, Washington, D.C., of which Mr. Thomas R. Kimball is the president. We hope our American brethren will find the United States Government more responsive to their patriotic endeavours than our own has been here to us.

Compensation for improvements is reasonable in the case of Agricultural Holdings under the Act of 1908, and not otherwise. So, in the country, it may well be a nice point as to whether a tenancy comes within the definition of a "holding" in that Statute. The recent case of "Macnamara (Landlord) and Lancaster (Tenant)" shows what a pretty problem this may often be. The property consisted of an inn, near Burnley, with eighty-six acres of land around it, with barns, outbuildings, etc., used for farming. It thus seemed to come within the section as a parcel of agricultural or pastoral land. So thought the County Court judge, and, on the authority of various Scottish cases, he decided that the Agricultural Holdings Act, 1908, applied, and he awarded the tenant compensation for his improvements. Then the landlord appealed, and now three judges in the Court of Appeal have, with more learning than lucidity, reversed this ruling. They considered that this tenancy was not technically a "holding" within the meaning of the Act, because of the inn which was included. They admitted that farm buildings and a farmer's house might go with the land and still leave it agricultural. But, as the inn was a good size, and formed an important part of the letting, the land could not be said to be wholly pastoral. In fact, they regarded the farm lands as merely adjuncts of the inn, and so not an agricultural holding. Perhaps some day after the war we may alter our absurd land laws in the direction of justice and common sense. For there is no valid reason at all why a tenant should not be compensated for improvements made by him on his landlord's property, whatever be the nature of the holding, and whether it is agricultural, pastoral, or urban.

All who have read Mr. Samuel Turner's "Eclipse or Empire" will be glad to get his "From War to Work," just published by Nisbet and Co., Ltd., at eighteenpence. Its aim is to show that until the meaning and value to all of us, individually and socially, of the processes of industry in their relation to profits and wages are understood, there is no hope of any betterment of our social relationships, or of our escape from the miserable and disastrous lack of unity of aim and object which, more than all foreign competition, crippled our production of the really good things of life, and found us so shamefully unprepared for the war which German perfidy forced us to engage in. Already there was war between men and women at home, and the relations of Labour and Capital were fast drifting into anarchy. The fallacies proclaimed by obscurantists about the natural inequalities of sex and the necessity of restriction of product had divided us into hostile camps in which the mutual hatred of the conflicting parties bade fair to blaze into civil war

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more bitter than any ever known in the history of these islands. And all this sprang from the lack of knowledge of the saving policy of high and scientific organisation of production. That this is recognised by some of us is hopefully apparent. That the mainspring of all endeavour to alter matters must be individual action, and not State action, as Mr. Turner contends, is, we think, proved up to the hilt; and, equally so, that the measure of our success will be almost directly in proportion to the degree of opportunity the new policy will create for all. One needs only to contemplate the appalling breakdown to-day of "democratic" Government departmental "organisation" to recognise that it is due to the immunity of State officials from the consequences of failure or malfeasance. What is wanted is the stimulus of real competition, and determination to organise and develop organisation along the line of least resistance, coupled with a new conception of the legitimate executive functions of Government. How the New Peace Offensive is to be started Mr. Turner succinctly suggests, and his encouragement to laggards and pessimists is that, as we *are* learning how to run the war while we are waging it, so we shall learn how to conduct the infinitely greater operations of peace intelligently when we begin to make the attempt to do so, *and not before.*

In a Middle West American city, 16-ton concrete piers resting on "solid blue clay" were raised 3 ins. during the severe winter of 1916-17, and subsequently settled back to their original position. It has been suggested that the lifting was due to hydraulic pressure resulting from the progressive freezing of the ground from the surface downwards, but a writer in the *Engineering News Record* asserts that the true cause is the growth of ice crystals. The capillary spaces in sand are relatively large, and a wet sand freezes to a mixture of sand and ice without appreciable elevation. On the other hand, ice forming below a weight resting on clay gradually increases in thickness owing to freezing of additional water that reaches the surface of the clay through capillaries. The latter are very small in clay, so that the interstitial water freezes much less readily than in sand. Ice forming on the top of wet clay is found to raise weights through a distance nearly equal to the total thickness of ice. Development of cracks in Portland cement after it has set is probably due to the growth of calcium hydroxide crystals, which may continue for several weeks. Pressure due to crystal growth forms the best explanation of the disintegration of building stones, the growth of concretions, the formation of ore deposits, and many similar phenomena.

In a competition open to the architects of East Prussia for designs for the reconstruction of the buildings surrounding the Evangelical Church at Lyck, which had been destroyed in the war, seventy-seven competitive designs were submitted, and the assessors have awarded the first prize to Paul Engler, of Gerdauen.

THE FUTURE RESPONSIBILITY OF ARCHITECTS.

Here and in America in the past, and here still with real, if not admitted, exceptions, the position of the architect has been a well-defined and well-working one. The building-owner and the builder were, or might be, two forces, one of which might possibly take advantage of the other when opportunity offered. The position of the architect, although employed and paid by the building-owner, was that of referee in matters of dispute, judge of the fitness of work done, and competent source of information to all parties concerned. Any inroads on a system which, when adhered to and when the builder and the building-owner were working for a duly qualified architect, has worked well, have been due to influences of people on local bodies, who harassed or intrigued against the architect, or to the reversal of proper conditions by certain great firms who controlled their own "architect," who, as little more than their paid servant, took his instructions from them, and in cases of dispute was, of course, their interested witness.

In America the introduction of what is known as the "cost plus a fixed fee" system has in a number of cases already revolutionised the relations between contractor and building-owner. The former now contributes his personal service, or that of his servants, and receives a fee for doing so. His position, therefore, has become as really professional as that of the architect or engineer; and to the long list of specialising experts we have now merely a sort of additional "supervisor," who practically assumes, in addition to the duties of the old contractor, a position sometimes hardly distinguishable from that of the architect, who in former days designed the building and co-ordinated the services of all the different trades thereon.

By those who favour the new system we are told that the change is for the better, because it is always inconvenient and sometimes impossible for the architect to deal with each expert separately, and that there is no reason why all of them should not be controlled by a single managing head. When one asks who is to be the new supervisor, we are told it is immaterial. It might be one of the "experts," or it would be quite in order for the architect to enlarge his organisation and include the construction as part of his duty, or for the contractor to include an architect in his technical staff. If we submit the apparent reasons why either arrangement is undesirable we get no satisfactory reply. We get a string of rather vague generalities prefaced by a general statement that the charge must become general, because present conditions in building demand a much closer co-operation between the architect and the contractor than has heretofore existed.

Says a writer in the *American Architect*:

> In drawing his plans the former should constantly consult with the latter as to materials and prices and with the owner as well, so as to keep the cost of construction within the desired limit, it being remembered that all risks caused by fluctuation of prices has been shifted from the shoulders of the contractor and that financial disaster to the owner may easily follow from excessive cost. The spirit of trading and business strategy has thus been eliminated from the building game, and for it has been substituted a system of mutual interest done upon an honour basis. Surely such business methods are an improvement on the old and must be more satisfactory as tending to establish more confidential business relations for all and in no way derogatory to professional dignity.

We confess we fail to see it. Indeed, the same writer appears hardly more assured in regard to the improvement he claims for "such business arrangements" on the old than ourselves, for later on he confesses that:—

> It seems doubtful whether these altered conditions and changed relations can be expressed in the terms of a formal contract; but they may take the form of a written understanding or gentlemen's agreement. A contract with a fixed price is no longer feasible owing to the unsettled condition of the market for materials and impending changes in the labour world, which may involve collective bargaining with the various trade unions. Should the present tendencies continue, it will be within the possibilities of the future to see all building operations of magnitude carried on by great corporations, furnishing from a single source every sort of technical service, as well as building materials and labour. Nor would this be anything new, but would seem to be merely a return to the practice of mediæval times during which the great cathedrals and other important structures were designed and built by companies or guilds of artisans.

We are not so sure about the last sentence. There has indeed been a good deal of talk here at times about getting rid of the, by some, much-despised "modern professional architect," and that, as the writer we have quoted insists, "sweeping revisions may be required in the present code of architectural ethics." Possibly: the general trend of the reformers of this sort both sides of the water seems to be in the direction of "sweeping" the architect out of existence altogether!

CONTROL OF IMPORTED SOFTWOOD TIMBER.

The deliberations of the Controller of Timber Supplies and a Select Committee appointed under the auspices of the Timber Trades Federation of the United Kingdom regarding the control of imported softwood have now been concluded, and the Committee had its final session with the Controller on June 13. We are now able to give further particulars of the rationing scheme which has resulted. As already announced, the firms interested are being called upon as a preliminary step to register themselves with the Timber Supply Department. The firms invited to apply for registration are those whose average transactions in sawn and planed imported softwoods for the years 1912, 1913, and 1914, taken together, exceeded 100 standards per annum, one form of application, "R.A.," being designed for merchants and retailers, and another, "R.B.," for shippers' agents and brokers. The Controller is prepared to give consideration to any cases of other firms who can show good reasons for their being included in the scheme.

Forms not already sent in should be forwarded to the Department of Timber Supplies (Branch 1), whose address will be 80, Newman Street, Oxford Street, W.1, on and after Monday, July 1. Particulars are required on the forms of the total purchases and stocks in the case of importers, merchants, and retailers, and the total sales in the case of shippers' agents and brokers, of sawn and planed imported softwoods (excluding plywood, box shooks, joinery mouldings, etc., and all hewn or partly hewn or round softwoods).

The classes of woods to be included in the return are:—

1. European red and white fir.
2. Canadian and Newfoundland pine, spruce, and other fir.
3. United States of America pine, spruce, and other fir.

The completed forms "R.A." and "R.B." will be scrutinised by the members of the Select Committee, who have agreed to assist in this respect, and the forms "R.A.," if in order, will serve as a basis for rations out of the national stock, which is to be formed under the new scheme. The use of forms "R.B." is explained later in this article.

So long as the scheme operates all softwoods will be purchased and imported into the United Kingdom by the Timber Supply

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Department, assisted by a Trade Purchasing Committee, and after a date to be arranged the Department proposes to take over as they arrive all parcels of softwoods falling within the scheme coming forward on private account.

Purchases for sale abroad by persons or firms in the United Kingdom are subject to permit from the Controller. The purchase of standing timber abroad is not affected by this scheme.

The timber will be stored at the ports of arrival or elsewhere at the expense and on behalf of the Government, the storeyards and facilities of the trade being used as far as possible for this purpose. The timber held and purchased by the Timber Supplies Department will be regarded as the "national stock."

The present holdings of the trade now in stock in the United Kingdom will remain the property of the respective owners, and may be disposed of to consumers holding permits to purchase. Such holdings will be subject to the existing regulations as to selling price, except that in order to deal with the difficulties that have arisen from time to time in connection with the remaining small and scattered stocks imported before May 15, 1917, from Norway and Sweden and July 19 from Canada and the U.S.A., members of the timber trade holding these stocks and furnishing a full return will be permitted to dispose of them on such conditions as may be allowed by the Controller. After a certain portion has been reserved for emergencies and for such requirements of Government Departments as it may be considered necessary to deliver direct, "national stock" will be available to recognised importers, merchants, and retailers under a rationing scheme based on the declarations made on the form "R.A." When the scheme is fully in force the sales which under the old conditions were made by the Government buyer to consumers will practically cease. The Controller has, of course, to reserve the right to vary or cancel the ration either in the case of a particular firm or generally in the event of sudden or grave emergency. The rations allocated to firms will be based on the average purchases declared on the form reduced by the amount of their present holdings. They will not be expected to draw upon the national stocks of supplies until their own stocks are exhausted The permit to purchase issued by the Department of Timber Supplies to consumers will entitle a merchant to make supply out of his own stock, or the ration from the national stock to which he be entitled. Allocation will be made in the first place for a six months' ration. It may be found that all specifications may not be able to be delivered exactly as requested, but supplies will be made having regard to the necessity of economy and the quantity of the particular sizes available.

The terms for payment to the Department for supplies drawn from national stock will be net cash in exchange for delivery order. Maximum prices for sales to consumers will be published from time to time in the trade Press, and supplies out of the national stock will be made to the trade at £3 15s. per standard below these prices, this margin to include working expenses and one month's interest where credit is allowed.

The trade may also add as separate charges:—Cost of loading, carriage, and delivery to destination if delivery is not taken by the receivers at the yard on which the delivery order is issued. Any sawing, planing, or machining at the current local rates. Interest on accounts not paid within one month of date of invoice, chargeable at 5 per cent. per annum from the expiration of one month to the date of payment.

Retail yard keepers entitled to a ration may apply to the Controller of Timber supplies for permission to draw a portion of their ration from the national stock for storage in their own yards for retail sale. Such timber may be disposed of to consumers not holding permits to purchase provided the timber is required for work of national importance or urgent necessity, and subject to a declaration by the buyer on a form kept by the retailer limiting the amount of timber of any kind purchased within a week from whatever sources by any one buyer without a permit to a maximum value of £5. The retailer will have to make a monthly summary of such sales, and the declarations will be inspected by the Department of Timber Supplies from time to time.

Timber drawn from the national stock and stored by retail yard keepers, as just described, may be sold at not more than £2 per standard over the scheduled prices, and in addition the cost of delivery to and from store may be added. The balance of the ration to retailers sold direct from national stock will be subject to the same conditions as those ruling for importers and merchants.

It is specially to be noted that merchant to merchant sales will not be permitted either of present holdings or rations from national stock, but only merchant to consumer transactions.

Furthermore, owing to the limited supplies of imported timber available, the rationing scheme can only be applied to recognised members of the timber trade and not to manufacturers and other consumers.

It is important to note that as a general principle firms cannot be registered in the dual capacity of merchant and agent.

The purchases of the Department will be made through shippers' accredited agents domiciled in the United Kingdom, except where there are special reasons to the contrary. The registration forms "R.B." will be used in connection with a pooling scheme for shippers, agents, and brokers. This part of the scheme embraces the formation of a pool, which will be made up of a contribution from the agents of a portion of their earnings and a contribution from the Government.

The sum so obtained will be divided in accordance with the accepted declarations on the forms "R.B.," sales on behalf of other than shippers ranking for only half the value of sales on behalf of shippers.

The necessary figures and statistics which are now being obtained will enable the scheme to be put into operation at an early date. A new Timber Order will shortly be issued which will consolidate a number of existing Orders and affect the control, not only of imported timber, but also of home-grown timber.

Sir George Frampton, R.A., has been elected Master of the Merchant Taylors' Company.

The Tredegar U.D.C. has requested Mr. A. F. Webb, architect, Blackwood, to carry out the preliminary work for the council's housing scheme. It is proposed to build 500 houses.

Mr. Frederick Geo. Chinnock, of Dinorben Court, Crookham, Southampton, land agent and surveyor, and of 11, Waterloo Place, London, has left net personalty £58,411, gross £109,233.

The Dayton Mechanical Tie Co., Dayton, Ohio, illustrates in the *Electric Railway Journal*, February 23, 1918, as a comparison one of their moulded concrete railway sleepers and a 6-in. steel I-beam that have been in use for five years on a track that is exposed to severe strains. Whereas the concrete sleeper is unaffected, the steel beam is heavily pitted.

A local Technical Advisory Committee has now been set up in Edinburgh by the Ministry of Labour and the Ministry of Pensions to deal with questions arising in connection with the training of discharged disabled sailors and soldiers in the various branches of the building trade. The secretary is Mr. J. T. Edwards, manager of the Ministry of Labour Employment Exchange, 174, Lauriston Place, Edinburgh.

The Sanitary Committee of Manchester report that, after careful consideration of the financial proposals for after-war housing schemes, submitted by the local Governmepnt Board in their circular letter of March 18 last, they are of opinion that the financial assistance offered by the Government is inadequate, and ought to be increased so as to cover the whole difference between the pre-war and post-war cost of building, and that the periods named by the Board for beginning and completing the work should be materially extended.

Our Illustrations.

"THE ENTOMBMENT": A WAR MEMORIAL REREDOS. — ROYAL ACADEMY, 1908.

Mr. W. Reynolds-Stephens, V.P.R.B.S., is represented at the Royal Academy this year by the War Memorial Reredos, of which we reproduce a photograph. The design occupies a place in the middle of the main south wall of the Lecture Room, Sculpture Gallery. Its subject is a statuary marble group of "The Entombment," monumentally treated in relief. Under the cornice in the centre above the figure panel is inscribed the designation "The Gateway to Life." The good effect of the composition owes much to the sculptor's judicious choice of marbles artistically arranged as a quiet colour scheme in the architectural frame of this altar piece.

ALL SAINTS' CHURCH, BASINGSTOKE, HANTS.

There are four photographs of this new church shown at the Royal Academy this year. Others, of the interior, will follow. The plan of the church consists of a nave and choir of equal width and height, divided by a lofty chancel arch. The north and south aisles run the whole length of the church, with a tower on the south side, the lower part of which, above the choir aisle, forms the organ chamber. The Lady Chapel is a continuation of the north aisle extending beyond the main building, and filling the eastern angle of the site. The style is English 14th century Gothic. There is a clerestory to both nave and choir, the clerestory windows of the choir being larger than those of the nave. There is a large three-light window at the west end, and the great east window is of five lights with rich tracery. The dressings of the interior are all of stone, the wall surfaces being plastered. There is a dado of thin red bricks to the aisle walls, with arched recesses to the windows. The architect is Mr. Temple Moore, F.R.I.B.A.

NEW ORGAN, ST. JOHN'S CHURCH, PETERBOROUGH.

The rood screen for this church was illustrated by a double page in our issue of April 10 last. To-day we give Mr. Cecil G. Hare's working drawing of his design for the new organ in the chancel. All the details of this organ case and the other new fittings, such as the Bishop's throne and sanctuary panelling, are of much interest, and when finished will furnish a most admirable equipment, greatly adding to the character of the building, which forms a setting for Mr. Cecil Hare's designs. We shall give an illustration of the sedilie, etc., at an early date.

ST. EDMUND'S SCHOOL, CANTERBURY.—ALTERATIONS AND ADDITIONS.

From the Royal Academy Exhibition we reproduced a drawing of these buildings in our issue of June 12, when two plans appeared with a descriptive note about the work which was designed by Capt. Charles J. Blomfield, F.R.I.B.A., 125, Park Road, Regent's Park. To-day we illustrate the architect's second drawing showing the premises as seen from the Whitstable Road.

NEW HIGH SCHOOL FOR GIRLS FOR ST. MARTIN-IN-THE-FIELDS, TRAFALGAR SQUARE: TO BE BUILT AT TULSE HILL.

The two chief plans and front elevation of this up-to-date County of London Secondary School were given in THE BUILDING NEWS on December 26 last, and on January 9 a double-page of details of the main façade appeared. A sheet of sections from the working drawings will be found in our issue for March 20 this year. To-day we give the remaining plans, and so complete the series, which will be valued for reference. Mr. H. Carter Pegg, F.R.I.B.A., of Parliament Street and Croydon, is the architect. The contracts were ready for signature on the eve of the outbreak of the war, which so far has prevented the work from being proceeded with.

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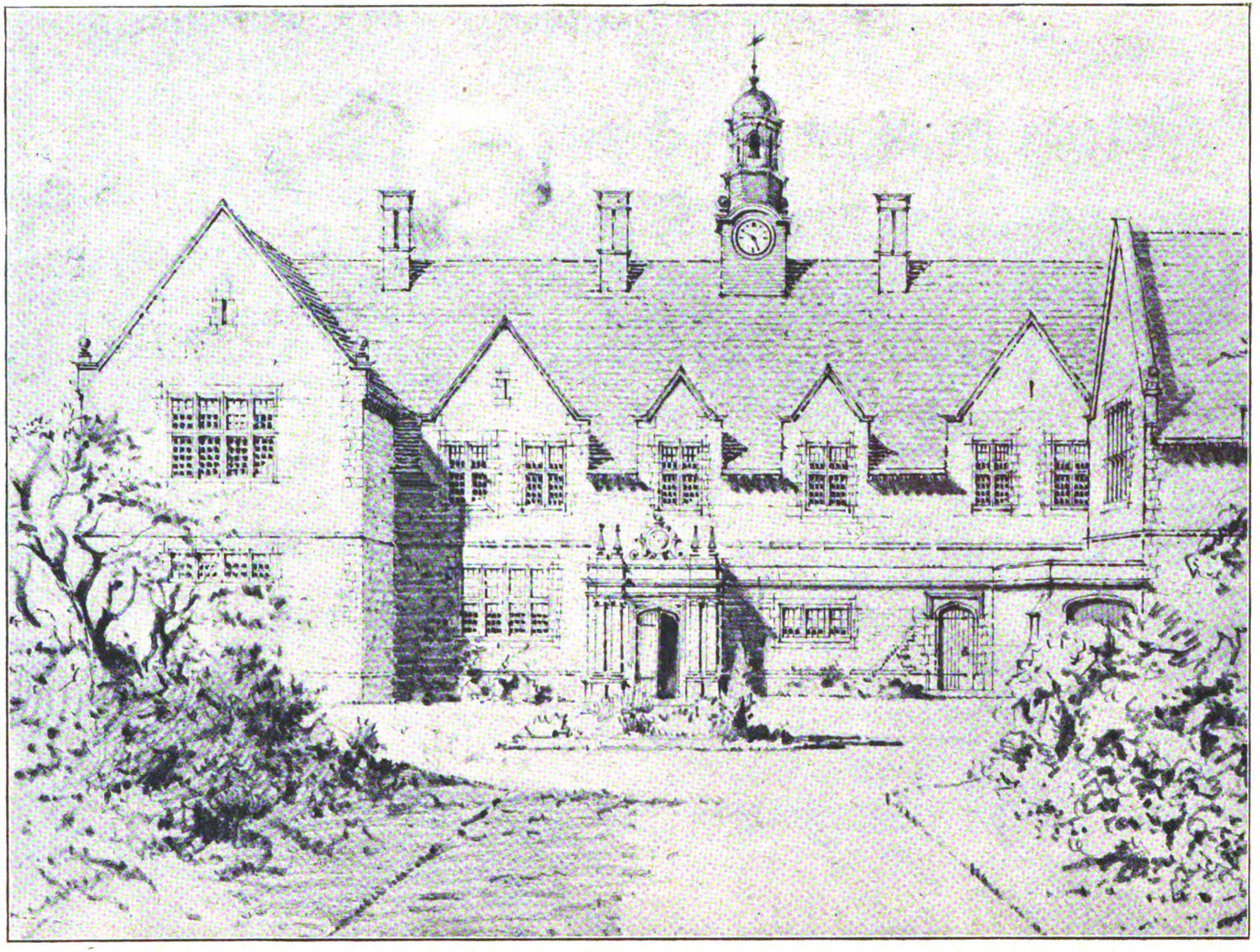

ST. EDMUND'S SCHOOL, CANTERBURY: ALTERATIONS AND ADDITIONS, WHITSTABLE ROAD FRONT.—Mr. CHARLES J. BLOMFIELD, F.R.I.B.A., Architect.

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Eric Guy, Photo.]

ALL SAINTS' CHURCH, BASINGSTOKE, HANTS: SOUTH-WEST VIEW.

Mr. TEMPLE MOORE, F.R.I.B.A., Architect.

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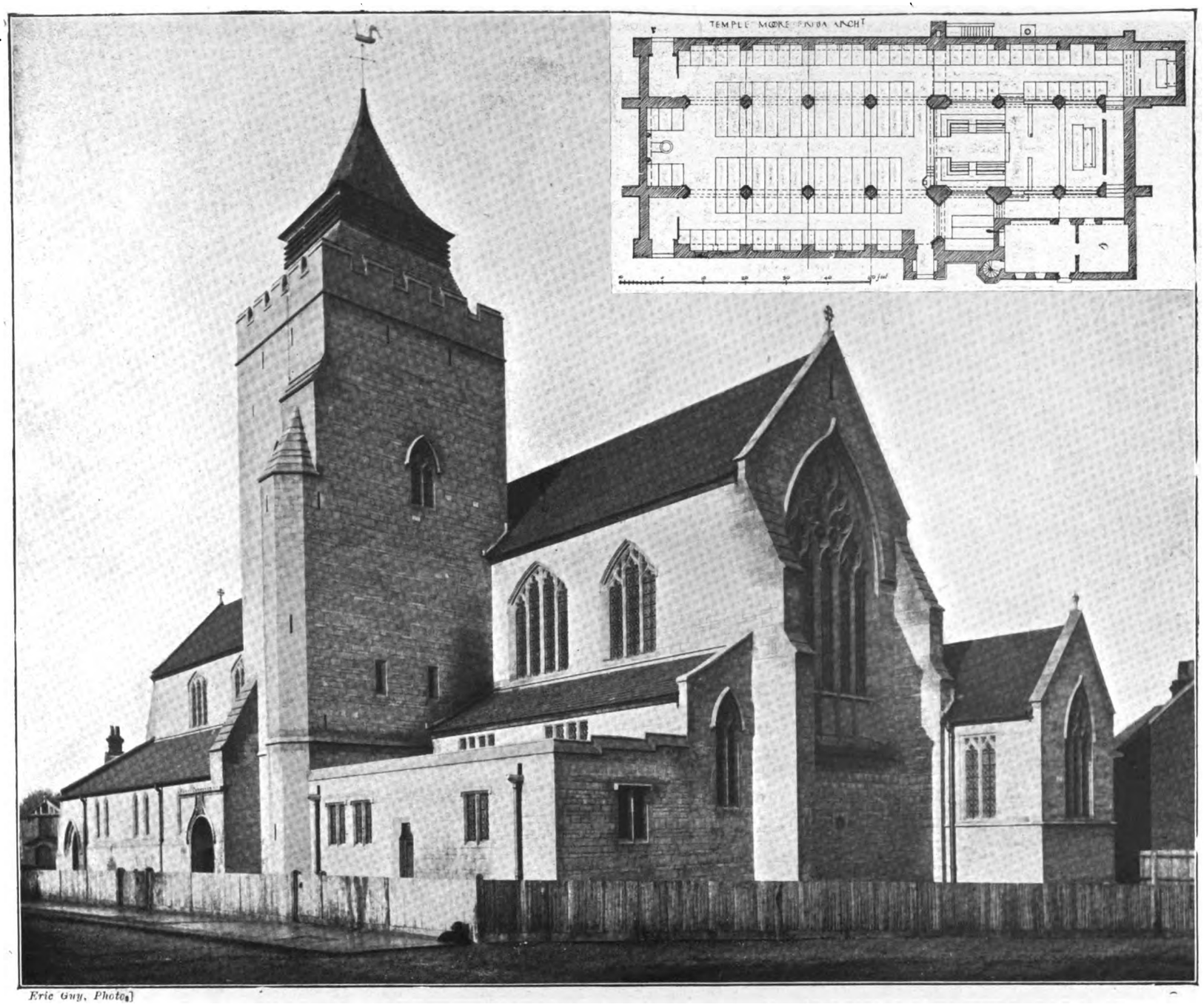

Eric Guy, Photo.]

ALL SAINTS' CHURCH, BASINGSTOKE, HANTS: SOUTH-EAST VIEW.

Mr. TEMPLE MOORE, F.R.I.B.A., Architect.

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Cooper and Humphreys, Photo.]

THE ENTOMBMENT : A WAR MEMORIAL REREDOS, ROYAL ACADEMY, 1918.
Mr. W. Reynolds-Stephens, V.P.R.B.S., Sculptor.

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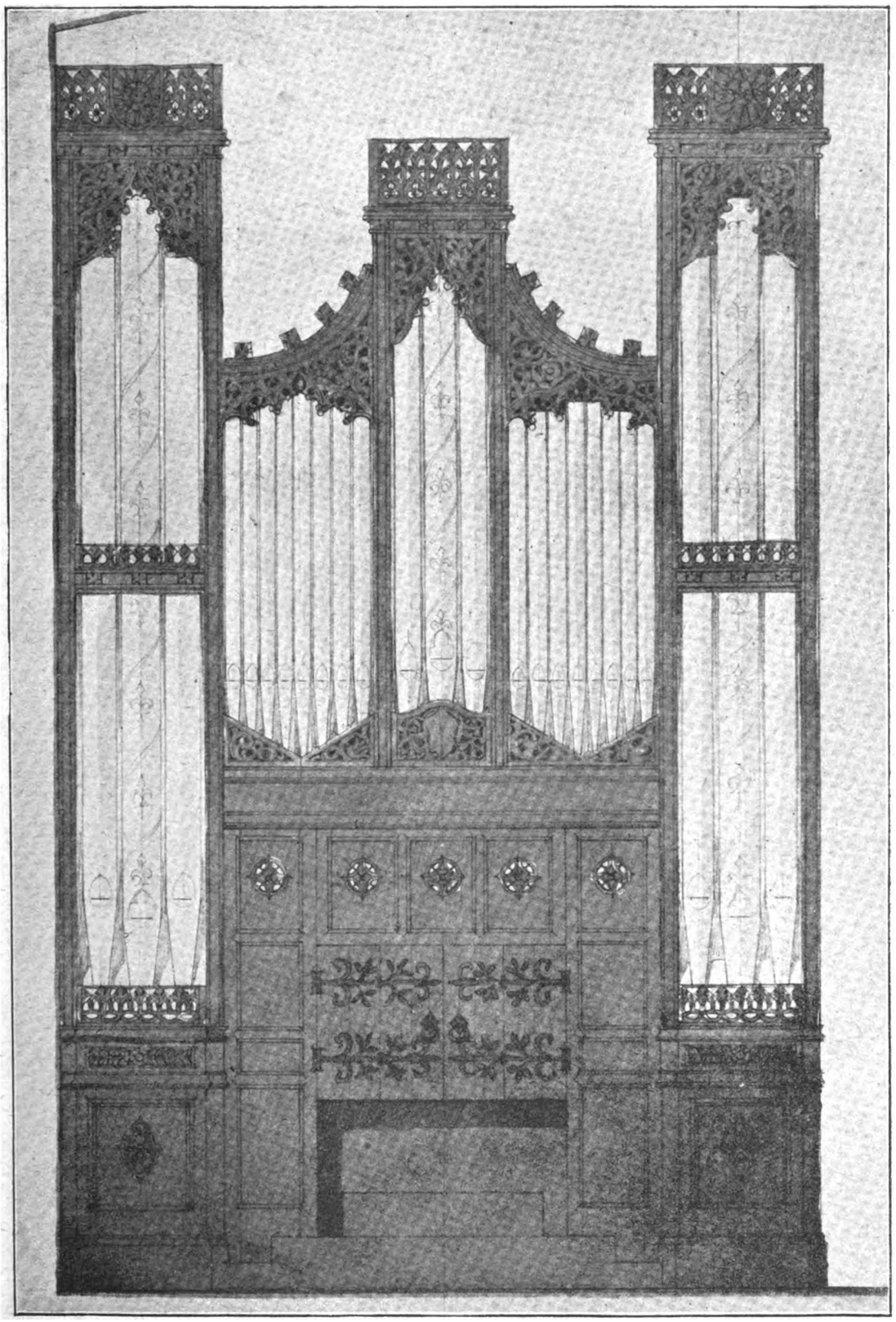

NEW ORGAN, ST. JOHN'S CHURCH, PETERBOROUGH.
Mr. Cecil G. Hare, Architect.

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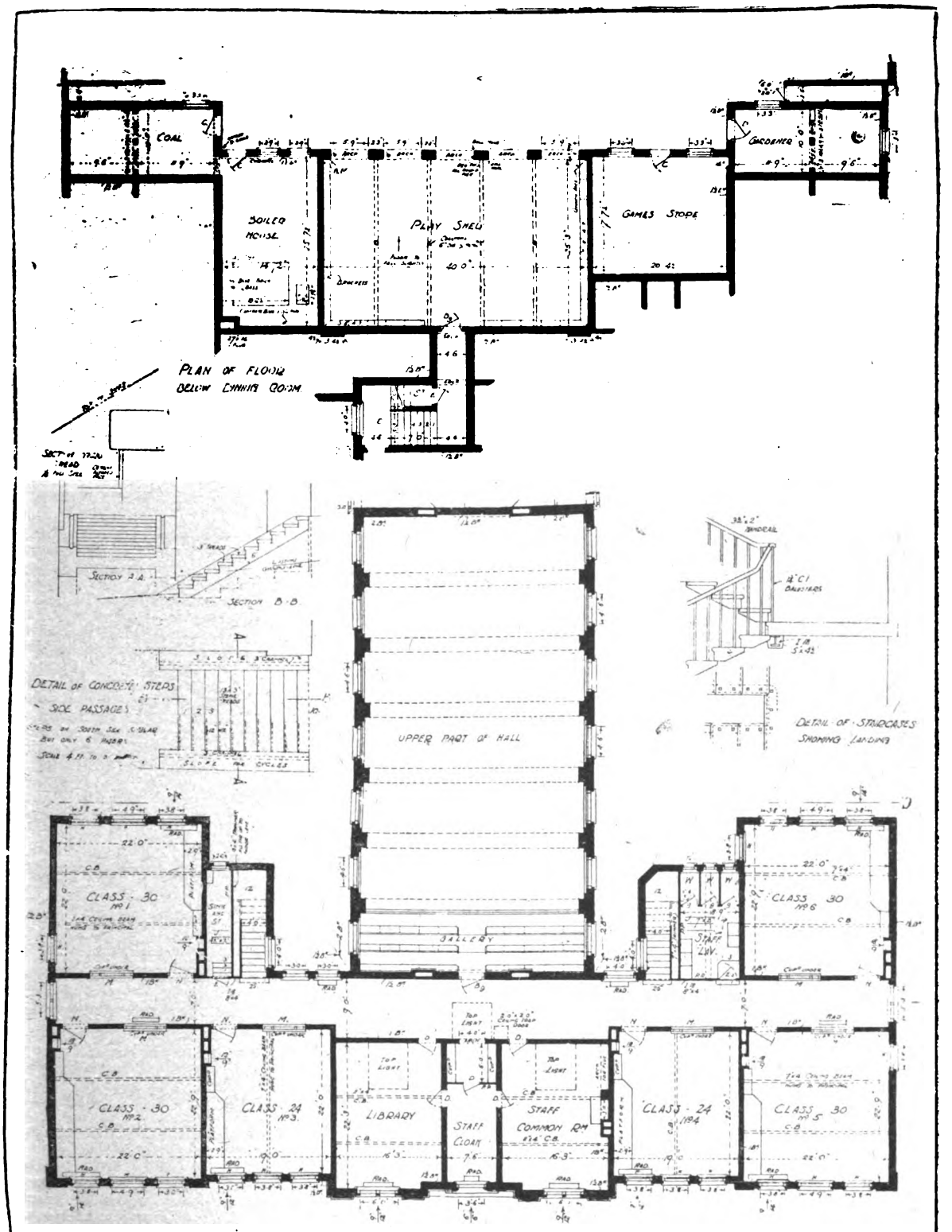

St. Martin's High School, Tulse Hill.

NEW HIGH SCHOOL FOR GIRLS FOR ST. MARTIN-IN-THE-FIELDS, AT TULSE HILL.—Mr. H. Carter Pegg. F.R.I.B.A., Architect.

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Building Intelligence.

ANSTY.—The parish church of Ansty, Wilts, has been reopened after the completion of repairs and restoration work which has been going on for nearly two years. This work has cost about £500, and was necessary to save the church from entire destruction from the dry-rot fungus. The presence of the Bishop is of some ecclesiastical interest, since for nearly seven hundred years the benefice of Ansty was exempted from Episcopal jurisdiction, having been given in 1211 by Walter de Turberville to the Knights of St. John of Jerusalem, who were freed from Episcopal supervision by a Bull of Pope Pascal II. soon after the founding of the Order in the eleventh century. Ansty Church was probably the only church available for Divine worship in the whole Diocese of Salisbury in the year 1212, except on a few Sundays, on which special indulgence was given by Pope Innocent III., who had interdicted King John.

MONTREAL.—Messrs. Viau and Venne, architects, Montreal, have designed a Roman Catholic church for the parish of St. Stanislas, Montreal, the general contract having been let to Ulric Boileau, Ltd., Montreal. The church is being constructed on a site 300 by 200 ft., on St. Joseph Boulevard East. It will be in the form of a Roman cross, the design being in the Romanesque style of architecture. The building will be as fireproof as it is possible to make it, reinforced concrete, marble, and incombustible material being almost exclusively employed. The exterior is of stone, backed with brick and terra cotta, while in the interior marble and concrete are freely used; the partitions are of terra cotta. Below the main church is a subchurch, to be used for meetings, children's masses, etc. The plans of the upper church provide for a colonnade, of marble, down each side of the nave, with a marriage altar on the left side, and sacristies and priests' vestry; a vestry for the choir boys will be located in the sub-church, beneath the priests' vestry. Three altars are to be situated in the sanctuary, which is to be semi-circular in form, the main altar being under a baldaquino. The main altar will be of marble; stalls, balustrade, and communion rails will be constructed of incombustible material. The interior scheme of decoration will include a large amount of modelling and relief work. The vault is to be of reinforced concrete. All the floors will be of terrazo. The entrances will be on three sides. The main one, on St. Joseph Boulevard, will consist of five doors, three leading to the upper church and one on each side leading to the sub-church. The stairways will be constructed of marble and concrete. Local stone is to be used for the exterior of the walls and towers. Stairways, of marble, with wrought-iron hand-rails, are to be located in the towers, leading to a public gallery, and also to the organ and choir gallery. Heating will be by a forced system, provision being made in the basement for the heating and ventilating apparatus, coal bins, etc. The following sub-contracts have been let: Steel, Trussed Concrete Steel Company, Montreal: roofing and plumbing, Michael Chouinard, Maisonneuve; electrical work, J. A. St. Amour, Montreal; painting, T. A. Ganthier, Montreal; marble and tile, Lepage Marble Works, Ltd., Montreal.

VENEERS.

Veneers were originally prepared from expensive foreign timbers in order that the cheaper woods of home growth might, by the use of a thin coating over the exterior, be rendered more attractive to the purchaser, and in some cases it became possible by this means to obtain much larger surfaces of the costly wood than could be prepared from the imported logs. It was practicable, moreover, to ensure lightness and strength by the use of veneer, and it has been affirmed that wood overlaid in this way is less liable to attack by the larvæ of beetles and other boring insects. Four processes can be employed in preparing thin sections of timber, namely, sawing, slicing, and cylindrical or spiral-cut turning.

For sawing purposes the log of wood remains fixed, and the cutting blade operates upwards and downwards, or in the form of a circular cutting wheel. In order to obviate the great waste caused by the saw cut, the much more economical slicing system was subsequently devised, which effects a saving of from 70 to 140 per cent. The most modern type of the machine removes the wood in the form of a continuous shaving, which may measure as little as half a millimetre in thickness. It is a species of giant plane, with several cutters, which travels over the surface of the wood, held in position by means of clamps. In the case of the cylindrical or spiral cutting plant, the tool is fixed and the wood revolves against the cutting edge. The machine resembles an automatic lathe in which the log, fixed at both ends, is made to revolve and encounters a cutting blade inclined at the proper angle. When the tool is given a spiral travel, it becomes possible to obtain sections of great length. The forms of the different machines are described and illustrated, as also of the machine used to cut up the veneers into sheets of uniform sizes. Great impetus has lately been given to this industry by the use of "plywood" or thin veneers stuck together in numerous thicknesses with glue or cement. By crossing the grain and carefully selecting the material, it becomes possible to prepare wood in large panels, which are extremely thin and no longer pliable to warp or split.

LEGAL INTELLIGENCE.

BUILDING RESTRICTIONS AND THE DUKE OF WESTMINSTER.—An application by Mr. Robert Lorden, a builder, for relief under the Courts Emergency Powers Act in regard to an agreement over a building site at the Marble Arch, belonging to the Duke of Westminster, came before Mr. Justice Astbury in the Chancery Division last Wednesday. The Duke granted to the Electric Pavilion, Marble Arch, Ltd., a lease of the ground, which comprised two plots, and the company assigned one of these to Mr. Lorden at a rent of £2,100. In consequence of the war Mr. Lorden's building operations were stopped, and in litigation between him and the company Mr. Justice Astbury gave judgment, declaring that Mr. Lorden was liable for the rent to the company, who had to pay the Duke the annual sum of £5,000 for the two plots. In the course of last Wednesday's hearing Mr. F. Russell, K.C., on behalf of the Duke of Westminster, said that when this case was last before the Court a vulgar and embittered attack was made on the Duke. That attack was repeated and reported in "the lower Press," with the usual headlines, which, in fact, held up the Duke to the contempt of his fellow-creatures. The Duke and his advisers felt very strongly about that, and he (counsel) was anxious to repudiate the statements that were made. His Lordship: Nobody takes any notice of these vulgarities in the Press. Mr. Russell: I am afraid they do. His Lordship: Well, you have stated in open Court that the Duke resents them. Mr. Cunliffe, K.C., who appeared for Pavilions, Ltd., said that if any words of his offended the Duke he was very sorry. He thought it was a hard case for his clients, and he was afraid he said it too strongly. Mr. Justice Astbury said that since he gave judgment in the case the parties had been unable to arrange terms with the Duke of Westminster for reasons which were made perfectly clear in letters from the estate office. With regard to the application of Mr. Lorden, he thought it would be a proper and fair thing to grant him relief under the Act of 1917 to the extent of £1,600. That would leave him liable to pay to the plaintiff £500 a year as from June 24, 1916, the relief to extend during the existence of the present building restrictions. His Lordship observed that the defendant's operations were stopped under the Defence of the Realm Regulations and in the interests of the country. He gave the company leave to apply to the Court in the event of their profits not being sufficient to pay the £5,000 a year.

The Glasgow Corporation is recommended to spend £1,360 in alterations at the Kelvingrove Art Galleries to provide for a permanent etching and engraving section.

Mrs. E. Waterhouse, of Yattenden, Berks, widow of the late Alfred Waterhouse, R.A., and sister of the late Thos. Hodgkin, author of "Italy and Her Invaders," has left net personalty, £11,383; gross, £12,554.

Our Office Table.

At the Liverpool Bankruptcy Court last week, the public examination was held of Urias Bromley Edwards, who had been a builder in Menlove Avenue, and had been a partner with his brother in the firm of Lewis and Bromley Edwards, estate agents. The statement of affairs filed by the debtor shows liabilities of £2,798 and assets of £451; and the debtor ascribes his failure mainly to inability, owing to the war, to realise to advantage houses he had built in Menlove Avenue, Liverpool. In cross-examination it appeared that the advent of the war caused a difficulty in selling the houses, and in February, 1915, he called his creditors together because of the difficulty of financing. In May he joined the Army, and was discharged in February, 1917, suffering from shell-shock.—The examination was closed.

The report to the shareholders of Waygood-Otis, Limited, at the eighteenth ordinary general meeting, held at the Cannon Street Hotel on June 25, showed that the profit was £22,281 0s. 6d., which, including the balance of last year's profit and loss account, £8,122 1s. 1d., made a total of £30,403 1s. 7d. Of this the dividend on the Preference shares absorbs £9,000, there has been placed to reserve for depreciation of investments £2,000, and to reserve account £2,000, leaving a balance of £17,403 1s. 7d., out of which on July 15 a twelve months' dividend on the Preference shares for the year ended July 15, 1917, is to be paid, leaving £8,403 1s. 7d. to be carried forward.

It is nothing unusual to move a house, but it is quite extraordinary to cut it in two, move it and then re-unite it. This was recently done in West Somerville, Mass., where a large three-storey dwelling was cut in two, moved from an eminence 10 feet above the street level, and set up a mile distant from its former resting-place. It was found impossible to move the house in its entirety, because of the narrow "holes" through which it was to be taken. As each of the sections was 35 by 20 feet at the base and almost 40 feet in height, they were liable to topple over during the process of moving. This was prevented by tearing down the chimneys and foundations and loading the first floor of each section to a considerable depth with brick. This acted as a ballast, and the sections were moved without any damage to the structure.

On Monday week the election took place of the new Sheriff of the City of London, when, after a show of hands, it was declared that Mr. Banister Flight Fletcher, C.C., F.R.I.B.A., Carpenter, had been chosen. The poll followed last Thursday, with the following result:—

Mr. Banister Fletcher, C.C.	1,155
Col. Smith, M.D., J.P., C.C.	806
Mr. C. G. Ashdown, C.C.	708
Col. and Deputy Vickers Dunfee ..	692
Alderman Sir Lulham Pound, Bt. ..	46
Major Dick	17

As soon as the counting was completed on Thursday night, the result was informally announced by Capt. and Sheriff Rowland Blades, J.P., C.C., L.C.C. Mr. Banister Fletcher proposed, and Col. Smith seconded, a vote of thanks to the Sheriffs as the Returning Officers. Capt. and Sheriff Blades, in reply, said that the thanks were entirely due to the Secondary and his staff, who had made such admirable arrangements for recording the votes, and, indeed, for the whole election. Mr. Under-Sheriff Howard Deighton, C.C., was honorary secretary of Mr. Banister Fletcher's Election Committee, while Capt. E. J. Trustram, M.A., C.C., acted in a similar capacity on behalf of Col. Smith. It is understood that they will be the respective Under-Sheriffs of the Sheriffs-Elect.

Work has recently been started on the building of a branch of the Kettle Valley Railway from Princeton, B.C., to Copper Mountain, where the Canada Copper Corporation is proceeding with a development scheme running into millions of dollars. W. P. Tierney and Son have the contract, and next month upwards of 1,000 men will be working. This new branch will cost about $1,000,000. It will be fifteen miles in length,

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and two miles of that distance is declared to be the hardest piece of construction work ever undertaken in the province. There is a total of 27 trestles to be built on the line, four large tunnels, open cuts of great height, and one very large fill. The undertaking will take about a year to complete.

Building in Montreal continues restricted, the permits last month standing at $539,890, a decrease of $83,050 as compared with the corresponding month in 1917. The indications are that the season will not be as good as last year, which was nothing to boast about. The prices of several commodities have again risen, which tends to keep down construction to only the most urgent requirements. Lumber is a notable instance of the increased value of materials, prices now being the highest known. Reports from the province are to the effect that a fair amount of building is proceeding, and in Shawinigan Falls it is active, due to war needs. Important shipbuilding projects are being carried out at Three Rivers and Lauzon, and there is also a scheme for a storage dam at Lake Brule to be built for the Quebec Streams Commission. Schools and churches will, as in 1917, form a substantial part of the work to be done in the province this year.

At the annual meeting of the North-West Federation of Building Trades, held in Manchester last Wednesday, Mr. Thomas McHugh (Liverpool) was elected President, Messrs. J. E. Mayers (Chester) and T. R. Lonsdale (Leeds) vice-presidents, and Mr. P. Howarth (Rochdale) treasurer.

A tablet in marble to the memory of William De Morgan, subscribed by some of his Chelsea and personal friends, designed by his former associate, Mr. Halsey Ricardo, and wrought by Mr. Laurence Turner, is now completed. Verd-antique moulding frames the panel of cream-white veined pavonazzo marble on which is the inscription. Miss May Morris, daughter of William Morris, who was De Morgan's friend and fellow worker in their allied crafts, will unveil the tablet in Chelsea Old Church, Cheyne Walk, on Thursday, July 11, at 6 p.m.

Telephone: DALSTON 1888.
OGILVIE & CO. Many years connected with the late firm of W. H. LASCELLES & CO. of Bunhill Row.
Mildmay Avenue, ISLINGTON, N.
EXPERTS in HIGH-CLASS JOINERY.
ALTERATIONS & DECORATIONS. ESTIMATES FREE.

FOR
Olivers'
Seasoned
Hardwoods,
APPLY TO—
WM. OLIVER & SONS, Ltd.,
120, Bunhill Row, London, E.C.

TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

GLASGOW.—For alterations at Kelvingrove Art Galleries, for the corporation. Accepted tenders:—
Cochrane, J., fitting up with Spanish mahogany print cases, £1,155 7s. 6d.; Toomer, W., and Sons, plaster work, £84 19s.; Scott, A. and J., painting, £120.

HAMMERSMITH.—For paving with asphalte and maintaining a length of Hammersmith Road between Rowan Road and the Broadway, and a length of Uxbridge Road between the eastern boundary and the west side of the West London Railway bridge, for the Hammersmith Borough Council:—
Val de Travers Asphalte Paving Co., Ltd., 113, Bishopsgate, E.C.2 .. .. .. £6,453 15 0
Limmer and Trinidad Lake Asphalte Co., Ltd., Caxton House, Westminster, S.W.1*.. 5,141 5 0
*Recommended for acceptance.

IPSWICH.—For supply and installation in the power-station, on foundations to be provided by the corporation, of a 3,000 kilowatt Brush-Ljungstrom turbo-alternator, complete with surface condensing plant, wet-air filter, spare exciter armature, etc.:—
Brush Electrical Engineering Co., Loughborough (accepted) £19,150 0 0

MARYLEBONE.—For taking out and rebuilding weigh-bridge and preparing new foundations, for the St Marylebone Borough Council:—
Pooley, H., and Son, Ltd. .. £108 12 6

POPLAR.—For fitting boiler with new type of chain grate, for the Poplar Borough Council:—
Underfeed Stoker Co. £2,887 10 0
(Recommended for acceptance.)

WIGAN.—For limewashing of offices, for the education department:—
Britnell, A. J., 26, Corporation Street, Poolstock, Wigan .. £35 10 0
(Accepted.)

LIST OF TENDERS OPEN.

BUILDINGS.

July 6.—General repairs and cleaning at the children's homes, and painting externally at the boys' home, St. Faith's Lane, and children's homes, 83 and 85, Pottersgate Street, Norwich. —For the guardians.—E. J. W. Huggins, Clerk to the Guardians, Norwich.

July 8. Alterations to secretary's office.—For the West Cornforth Industrial Co-operative Society, Ltd.—Particulars on application at the central premises, High Street, West Cornforth.

ENGINEERING.

July 18.—Construction of reinforced concrete gauge basins and a small mass concrete dam, and laying about 200 lineal yards of 18-in. cast-iron pipes in Rishworth township, near Halifax.—For the Wakefield Corporation.—Town Clerk, Town Hall, Wakefield.

PAINTING.

July 8.—Limewashing the out-offices at certain Council and Trust schools in Nottingham.—For the Education Committee.—W. J. Abel, Clerk, Education Offices, South Parade, Nottingham.

July 8.—Painting and varnishing of central premises of the West Cornforth Industrial Co-operative Society, Ltd., in High Street, West Cornforth.—For the society.—Particulars on application at the central premises.

July 10.—External painting at the Park Fever Hospital, Hither Green, Lewisham, S.E.—For the Metropolitan Asylums Board.—D. Mann, Clerk.

The Minister of Munitions has issued an Order increasing the maximum prices of lead fixed by the Lead Order, 1917. Sheet lead is raised from £39 10s. to £41 per ton; lead pipe from £40 to £41 10s. per ton; dry white lead from £46 to £51 per ton; white lead in oil from £53 to £58 per ton for amounts of 5 cwt. and over, and from £55 to £60 per ton for amounts less than 5 cwt.; and red lead and litharge from £42 to £45 per ton.

OMNILAC
A SPECIALTY IN COPAL OAK VARNISH.
OMNILAC dries with a hard, brilliant, and durable surface.
OMNILAC is a real double-duty varnish, suitable for both inside and outside work.
OMNILAC is an inexpensive, good quality, all-round varnish.
ROBT INGHAM CLARK & CO LTD
WORKS:-
WEST HAM ABBEY.
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LONDON
OFFICES:—
WALTER HOUSE,
Bedford St., Strand, W.C.2

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LATEST PRICES.

N.B.—All prices must be regarded as merely approximate for the present, as our usual sources of information are in many cases failing us.

TIMBER.

Owing to stoppage of supplies all prices have advanced considerably, and are controlled by the Director of Materials.

IRON.

Rolled Steel Joists, English.....
Compound Girders, Ordinary Sections .....
Compound Stanchions .....
Angles, Tees, Channels and Flitch Plates .....
Wrought-Iron Girder Plates ....
Steel Girder Plates .....
Steel Sheets (Single or Double)..
Steel Strip .....
Basic Bars .....
Mild Steel Bars .....
Steel Bars, Ferro-Concrete Quality (basis price) .....

} Prices controlled by Ministry of Munitions.

OTHER METALS.

A licence must be obtained from the Director of Materials (A. M. 2(E)), Hotel Victoria, Northumberland Avenue, S.W., and should accompany orders for quantities over 1 cwt.

	Per ton.			Per ton.		
Lead Water Pipe, Town.....	*£39	0	to	—		
Country.....	*40	0	,,	—		
,, Barrel Pipe, Town	*40	0	0 ,,	—		
,, ,, ,, Country.....	*41	0	0 ,,	—		
Lead Pipe, tinned inside, Town	*42	0	0 ,,	—		
,, ,, ,, Country	*43	0	0 ,,	—		
Lead Pipe, tinned inside and outside.....Town	*45	10	0 ,,	—		
,, ,, ,, ,, Country	*46	10	0 ,,	—		
Composition Gas-Pipe, Town..	*43	0	0 ,,	—		
,, ,, Country	*44	0	0 ,,	—		
Lead Soil-pipe (up to 4½in.) Town	*42	0	0 ,,	—		
,, ,, ,, ,, Country	*43	0	0 ,,	—		
[Over 4½in. £1 per ton extra.]						
Lead, Common Brands.....	26	0	0 ,,	—		
Lead, 4lb. sheet, English.....	38	10	0 ,,	—		
Lead Shot, in 28lb. bags	—		,,	—		
Copper Sheets, Sheathing & Rods	168	0	0 ,,	170	0	0
Copper, British Cake and Ingot	147	0	0 ,,	150	0	0
Tin, English Ingots	365	0	0 ,,	—		
Do., Bars	186	10	0 ,,	187	10	0
Pig Lead, in lcwt. Pigs. Town ..	33	12	6 ,,	34	12	0
Sheet Lead, Town.....	*38	10	0 ,,	—		
,, ,, Country	*39	10	0 ,,	—		
Genuine White Lead.....	*55	10	0 ,,	—		
Refined Red Lead	42	0	0 ,,	—		
Sheet Zinc.....	138	0	0 ,,	—		
Spelter	93	0	0 ,,	110	0	0
Old Lead, against account.....	25	0	0 ,,	—		
Tin .....per cwt.	18	5	0 ,,	—		
Cut nails (per cwt. basis, ordinary brand)	1	10	0	—		

* For 5 cwt. lots and upwards.

BRICKS.

Sale, Purchase for use, of all Bricks exceeding 0,000 in number is now forbidden by the Minister of Munitions except by license of the Controller of Bricks, to whom all applications for permits must be made at Whitehall Place, S.W., marked "Building Brick Permit."

(All prices net.)

First Hard Stocks....	£4	0	0	per 1,000 alongside, in
Second Hard Stocks..	3	15	0	,, ,, [river.
Third Hard Stocks ..	1	14	0	,, ,, ,,
Mild Stocks.....	2	2	0	,, ,, ,,
Picked Stocks for Facings.....	3	5	0	,, delivered at rally. station.
Flettons	2	10	0	,, ,, ,,
Best Fareham Red ..	4	0	0	,, ,,
Best Red Pressed Ruabon Facing....	5	15	0	,, ,, ,,
Best Blue Pressed Staffordshire	6	5	0	,, ,, ,,
Ditto Bullnose	6	10	0	,, ,, ,,

WHITE AND COLOURED GLAZED BRICKS

WHITE IVORY AND SALT GLAZED (PER 1,000).

	£	s.	d.
Stretchers	15	17	6
Headers	15	7	6
Quoins and Bullnose	19	7	6

Second quality £1 per 1,000 less.

OTHER COLOURS.

	Best.			Seconds.		
	£	s.	d.	£	s.	d.
Stretchers	21	7	6	16	7	6
Headers	20	17	6	15	17	6
Quoins and Bullnose	24	17	6	19	17	6

MOULDED BRICKS.

Stretchers and headers, 8d. each (plus 50%).
Internal and external angles, 1s. 2d. each (plus 50%).
Majolica and soft glazed stretchers and headers, £26 7s. 6d. per 1,000.
Majolica and soft glazed Quoins and Bullnose, £31 7s. 6d. per 1,000.
NOTE.—Above prices are in full truckloads at London Goods Station.

SAND AND BALLAST.

	s.	d.	
Thames Sand	12	6	per yard, delivered.
,, Ballast	12	6	,, ,,
Pit Sand.....	12	6	,, ,,
Best Washed Sand	14	0	,, ,,

CEMENT AND LIME.

	s.	d.	s.	d.	
Best Portland Cement	55	0	to 58	0	Per ton, delivered.
Ground Blue Lias Lime	33	6	at depot.		

Exclusive of charge for sacks.

	s.	d.	s.	d.	
Grey Stone Lime.....	47	0	per ton		
Stourbridge Fireclay in sacks 37s. 6d. per ton at depot.					

STONE.*

		£	s.	d.
Yellow Magnesian, in blocks ..	per foot cube	0	3	3
Red Mansfield, ditto	,,	0	2	9
White Mansfield, ditto	,,	0	2	9
Red Corsehill, ditto	,,	0	2	6
Darley Dale, ditto	,,	0	2	5
Grienshill ditto.....	,,	0	2	4
Closeburn Red Freestone, ditto	per foot cube	0	2	2
Ancaster, ditto	,,	0	2	0
Chilmark (in truck at Nine Elms)	,,	0	1	10½
Hard York, ditto	,,	0	3	10
Do. do. 6 in. sawn both sides. landings, random sizes	per cot sup.	0	3	3
Hard York, 3 in. slab sawn two sides, random sizes.....	per foot cube	0	1	3

OILS.

Rapeseed, English pale,	per tun	£28	15	0 to	£29	5	0
Ditto, brown	,,	26	15	0 ,,	27	5	0
Cottonseed, refined....	,,	29	0	0 ,,	30	0	0
Olive, Spanish	,,	39	10	0 ,,	40	0	0
Seal, pale.....	,,	21	0	0 ,,	21	10	0
Coconut, Cochin	,,	46	0	0 ,,	46	10	0
Ditto, Ceylon.....	,,	42	10	0 ,,	43	0	0
Ditto, Mauritius	,,	42	10	0 ,,	43	0	0
Palm, Lagos	,,	32	5	0 ,,	33	5	0
Ditto, Nut Kernel.....	,,	35	0	0 ,,	35	10	0
Oleine	,,	17	5	0 ,,	19	5	0
Sperm	,,	30	0	0 ,,	31	0	0
Linseed Oil.....	per gal.	0	8	3	Controlled.		
Baltic Oil.....	,,		—		,,		
Turpentine.....	,,	0	11	3 ,,	,,		
Putty (Genuine Linseed Oil)	per cwt.	1	2	0 ,,			

TILES.

	s.	d.		Divrd.at
Plain red roofing tiles	62	6	per 1,000	ry. stn.
Hip and Valley tiles..... 5s. to	9	0	per doz.	,,
Broseley tiles.....	75	0	per 1,000	,,
Ruabon red, brown, or brindled ditto (Edwards)	77	6	,,	,,
Ornamental ditto	80	0	,,	,,
Staffordshire (Hanley) Reds or brindled tiles	75	6	,,	,,
Hand-made sand-faced	80	0	,,	,,
Hip tiles .... 5s. to	9	0	per doz.	,,
Valley tiles ..... 5s. to	9	0	,,	,,

SLATES.

No reliable quotations for slates seem obtainable at present, and architects and builders will do well to specify and use some of the excellent substitutes which have found favour of late, partly as a consequence of the unsatisfactory condition of the slate industry, as well as the result of their greater durability and other recommendatory qualities. Prices of some of the best of these are as follows:—

ASBESTOS ROOFING TILES, supplied by the British Uralite Co., Ltd., 85, Gresham Street, E.C. From £4 14s. per 1,000, 9 in. by 9 in., 400 tiles per square of roof covered, price per square, 37s. 8d., to £33 8s. per 1,000, 24 in. by 24 in., 34 tiles per square of roof covered, price per square, 22s. 3d.

ALLIGATOR ROOFING, supplied by the British Roofing Co., Ltd., 11, John St., Crutched Friars, E.C., in rolls of 216 feet super, with the necessary mastic and nails for fixing: 1 ply, 19s. per roll; 2 ply, 25s. per roll; 3 ply, 33s. per roll.

"POILITE." Made by Bell's Asbestos Co., Ltd., Southwark Street, S.E. Standard tiles in red, blue, and grey colours, carriage paid to nearest railway station, 15½ by 15½:—Red, £14 3s. 3d. per 1,000; grey or blue, £12 15s. per 1,000. Approximate prices per square, fixed complete to roof-boards or battens:—Red, £1 10s. 9d.; grey or blue, £1 8s. 9d. At present above prices are subject to a premium of 17½ to 33⅓ per cent. in consequence of rise in prices of material and other war exigencies.

ROK ROOFING. Made by D. Anderson and Son, Ltd., Lagan Felt Works, Belfast, and Roach Road Works, Old Ford, London, E. Prices and particulars in new booklet "V," to be had on application.

GLASS (IN CRATES).

	15 oz.	21 oz.	26 oz.	32 oz.
English Sheet Glass				
Fourths.....	7d. ..	8d. ..	9d. ..	10d.
Thirds.....	7½d. ..	8½d. ..	9½d. ..	10½d.
Fluted Sheet.....	7½d. ..	8½d. ..	— ..	—
Hartley's English Rolled Plate	⅛ in. 5d.	¼ in. .. 5½d.	..	½ in. .. 6d.

	White.	Tinted.
Figured Rolled	6½d. ..	7½d.
Repoussine	6d. ..	7d.
Rolled Sheet	6d. ..	—
Stippolyte.....	6½d. ..	7½d.

A new mission church is to be built at Bescar Lane, Scarisbrick, at an estimated cost of £800.

It is proposed to erect a public building at Cambridge as a war memorial, at at estimated cost of £2,500.

The British Roofing Company, Ltd., of 11, John Street, Crutched Friars, E.C.3, are now in a position to give delivery of their well-known Alligator asbestos cement sheets for fireproof construction of walls, roofs, and partitions. The sheets are being extensively used by the Admiralty and War Office with very satisfactory results.

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We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

It is particularly requested that all drawings and all communications respecting illustrations or literary matter, books for review, etc., should be addressed to the Editor of the BUILDING NEWS, Effingham House, 1, Arundel Street, Strand, W.C.2, and not to members of the staff by name. Delay is not infrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

When favouring us with drawings or photographs, architects are asked kindly to state how long the building has been erected. It does neither them nor us much good to illustrate buildings which have been some time executed, except under special circumstances.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

New Rood and Parclose Screens, St. Cleer, Cornwall. Mr. George H. Fellowes Prynne, F.R.I.B.A., Architect.

School Medical Department Building, Sims Street, Sheffield, for the Education Committee. Four elevations and three plans. Mr. F. E. P. Edwards, F.R.I.B.A., City Architect.

Housing of the Working Classes, England and Wales. First Prize Design, Class C, Urban Districts. South-west Area. View, elevations, sections, and plans. Mr. W. A. Greenen, Architect, Port Sunlight, Cheshire.

Currente Calamo.

The deputation from the Labour Housing Association which interviewed the President of the Local Government Board yesterday week got little for their pains but more of Mr. Hayes Fisher's usual official assurances of goodwill frustrated by the unfeeling Treasury! He said the cleverest financier in London was unable to tell them at what rate the Government would be able to get money after the war. He had already put forward a suggestion that the Treasury should lend money below the rate at which they borrowed it, but they had said that they could not possibly consider such a proposal. He considered it impossible to build houses for the working classes at an economic rent for certainly some few years after the war. Hence the proposal that the Government should be responsible for 75 per cent. of the loss on such rentals as were agreed on as reasonable for the working classes to pay, the local authorities being responsible for the other 25 per cent. He did not agree that the local authorities would shrink from that financial obligation. It was proposed to limit the liability to a penny rate, but he felt that many municipalities could afford to pay more, especially if they were going in for a large number of houses, and he saw no objection to the local financial obligation exceeding in certain instances the amount specified. He wished to make it clear, however, especially in regard to rural authorities, that if the obligation exceeded 25 per cent. it would be within the Board's discretion to say that the liability should not exceed a penny rate. He did not agree with the suggestion that in no circumstances should private enterprise be called in to help the Board in those matters. As this scheme postulated a loss, he did not see how it affected the private owner or public utility company who were working for a profit; but the problem would be an extraordinarily difficult one to solve, and the Board were indisposed to shut out from their judgment any scheme by which the private owner or public utility company might come in and help them. As private owners had built 95 per cent. of the houses before the war the Board would not lay it down that the Treasury should not advance any money to private owners or public utility companies. That must be left to their discretion. All this trickle of cold water was followed by another shower from Dr. Addison, who said that so far as the acquisition of land for housing in rural districts was concerned, proposals had been formulated and were now under a Government Committee, and there was also a committee dealing with all requirements regarding building materials for the after-war period, and Dr. Addison doubtless has lists ready of any number of new Committees, if that would please the houseless!

There is much more sense and evidence of practical knowledge in the memorandum (recently issued as a White Paper) of the Advisory Housing Panel of the Ministry of Reconstruction which, under the chairmanship of Lord Salisbury, has been considering the conditions of housing in England and Wales as an emergency problem, than in most of the stuff of its sort with which, so far, we have been favoured by Government Departments, Committees, art experts, and the rest of the good people of all sorts who are on the congenial job as advisers and administrators! It is perfectly evident that increased arable cultivation—the greatest need now and after the war—is impossible without more agricultural labourers, and that it is imperative that the Government should secure within the first year after the war the building of sufficient houses for the working classes, to make up the deficiency caused by the cessation of building, and to supply some part of the special rural needs; that building be begun without delay after the war; that the labour made available by demobilisation may be absorbed and unemployment prevented; that the opportunity be taken for ensuring a good standard of design, and that the houses be built in the localities where they are the more needed The Panel recommended that the country should be divided into areas and that over each should be placed a District Housing Commissioner, to be appointed by the President of the Local Government Board. The first duty of the Commissioner would be to check the returns of the local authority and to decide how many houses should be built in each area. The principle to be followed in arriving at the total number to be built would be to make good the additional scarcity caused by the war and to meet the urgent needs of the country districts. To obtain a high standard of building the Panel recommend that a competent architect should be appointed to the staff of each Housing Commissioner, to be selected from a panel of local architects. The last recommendation is the most practical yet offered

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Mr. Thomas H. Lawson in the *Manchester Guardian* of Monday last, like more of us, says, "I have made strenuous efforts to discover what is meant by 'town-planning lines,' but have failed utterly, for on no occasion have I got beyond the answer of one of Dr. Addison's Housing Committee, who replied: 'Well, really, don't you know that by town-planning lines we mean the standardisation of cottages, and a limitation of eight houses to the acre, or, at the worst, twelve to the acre?' To most of the men to whom I have spoken this limitation seems to be regarded as the only panacea for our admittedly bad housing condition. To my mind this denotes a very limited vision and an entire misconception of the importance, scope, and opportunity which town-planning affords." What is wanted, of course, is a comprehensive yet modern logical direction to our town-planning movement which shall help us to express, in terms of our strenuous national life, what our towns ought to be, and, indeed, some day must be—namely, centres of well-being which develop a perfect and self-sufficing life. In any case, it is quite certain that we cannot express our civic ideals. however low these may be, in terms of cottages; neither can we attain to Aristotle's conception by confining our studies solely to the provision of housing accommodation for the working-classes. This wider conception of our town-planning aims for which Mr. Mawson pleads is so vitally important that its definition cannot be left to builders of cottages, no, not even when supported by a Government department. ' Mr. Mawson's letter should be read by all capable of grasping its purpose and responding to "a conception which will help us to secure the best possible economic, social, physical, and æsthetic development of the city and its inhabitants, and cottages alone will not secure this result, even when built on 'town-planning lines.' "

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Mr. Guy Cadogan Rothery pleads, in the *Manchester Guardian*, for war memorial roads as combining romance and utilitarianism in a greater degree than most other tributes to our heroes. "Consider," he writes, "whether we desire to commemorate individuals, special corps, or our grand army as a whole, the sublime idea of pioneering, of opening a way to new things, of making rugged paths safer and smoother, leaps to our minds. For all those companions of the Great War must be acknowledged as true pioneers, battling through darkness to light. So let their memories be associated with something that is unmistakably symbolic of advance and service—the perfect highway." The idea has much to commend itself. While the larger share of the money should come from the Exchequer, no doubt if these new or renewed highways become war memorials, county and other authorities, private corporate bodies, and individuals would not be backward in providing their quota towards the necessary outlay. This would be all the easier and more natural because the amenities would call for handsome avenues and pleasant gardens, wayside fountains, monumental benches, possibly protected by wind-screen curtain walls surmounted by statuary; safety, on the other hand, would demand an adequate supply of convenient subways, raised and sunken footpaths, and foot or vehicular bridges. We might even have partly covered pedestrian promenades, something like roofed pergolas, giving an outlook over highway or scenery, while affording a background for benches and panels for commemorative fresco or bas-relief sculptures. Any one of these embellishments could be dedicated to some army, division, regiment, fleet, squadron, ship, or other unit or individual. Such a scheme, wide enough in its symbolism and utility to appeal to the bulk of the people, could produce an enduring and truly national memorial of this stupendous world event and of those who have so valiantly taken part in it.

Why not a Wheel Tax for Roads? That is the question asked by a Canadian expert in paving, who declares that in Montreal the "City fathers" have "economised" on the roads to such an extent that the streets are so bad that they can be traversed neither with pleasure nor with safety. We give Mr. Mullen's paper on another page, and confess his arguments are plausible. Things are fast becoming as bad in London and some of our other great towns as they are declared to be in Montreal, and we are sure—the Government, of course, excepted—no vehicle owner will deny that he is paying to-day far more for repairs of damage due to bad roads than he would ever be called upon to contribute as a wheel tax. So far, the exertions of the Road Board have been of the heroic sort that exhausts itself in the contemplation of ideals mostly, apparently, of the sort that challenged Mammon's admiration of the golden pavements in Heaven, with the reservation that the gold the Road Board gets goes anywhere but on the roads! Many may fancy that a wheel tax would be a return to the old toll roads system. The two things totally differ, or might do so under proper management. The tolls were mostly farmed out to private owners, who spent most of the little they parted with in getting in the money. Even with their present training in the art of spending the most money and getting the least for it our war administrators would hardly be allowed so to bungle a wheel tax in perpetuity! The woes of the poor pedestrian, whose worn-out shoe leather is no defence against the perils of our ruined roads, will not always be forgotten when peace comes, nor the patient abiding of the comparatively meek and comparatively harmless bicyclist perish for ever.

Under the heading "The Guild of the Builder," the *City Press* gives some interesting notes about the Guild of Tylers and Bricklayers, which was granted its first Charter by Queen Elizabeth. Though the first Charter was only granted in the year 1568, the Fraternity existed for long years before then in a more or less inchoate form. Its foundation may, in fact, be said to date back to the middle of the thirteenth century. Up to that time all the houses in London were thatched. The danger run through fire led to the introduction of tiles. Various steps were taken to encourage the new departure, and, in particular, it became the custom to impose fines in tiles instead of in money. Several examples of this are on record. On one occasion, for instance, a barber was ordered to pay 300 tiles for shaving customers after the hours fixed by the authorities. From time to time trouble arose between the different branches of the craft—"the plain tylers, the rough tylers, the corner tylers, and the paving tylers"—and the Mayor and Aldermen were then called in to act as arbitrators. Then, again, the duty was cast upon the City Fathers of regulating the rate of wage and the charge made for tiles. In 1362, to give one illustration, an order was issued under which tylers were debarred from profiteering by the imposition of enhanced charges "by reason of the great tempest." Again, a master was not permitted to receive more than 6d. a day, with 4d. for each man, the penalty for non-observance of the regulation being imprisonment "for a year and a day." It was similarly not permissible to sell "solid tiles" for more than 7s. per 1,000; and "holews" for more than 7s. per 100.

The powers given and exercised under the Charter were very far-reaching. The right to condemn faulty workmanship was in particular conceded, and, in pursuance of this, power was given to the Master and Wardens of the Fellowship "to enter every place within fifteen miles compass of the City of London, where any earth or clay shall be dug." Unlike the majority of the companies, the Fellowship appears to have concentrated its entire attention on the craft, and to have taken no active interest in affairs of State—Parliamentary or Civic. The terms under which leases were granted form very curious reading. One tenant was granted in the year 1631 an extension of twenty-one years on the conditions that he was "to give xxv. lb. fine at the selling of his lease"—whatever that might mean—"to pay 11 lbs. a year at the four feasts," to give each of the assistants a pair of gloves, and "to bestow a fat buck upon the Company for a feast." Whether all these contributions represented the rent, or were supplementary to it, the minutes do not make clear; and, in a like way, it is not all certain whether the gift of gloves and of a buck was to be made once and for all, or periodically. The Company to-day boasts no hall. It had, however, in years gone by a fine old home in Leadenhall Street, and to this day, the writer believes, the site is in the possession of the Guild. The home was Sussex Hall, a pre-fire building, which formed the first headquarters of the City of London College.

An architect in his work is always up against the question of cost. He may use his art and his love of beauty in designing a fine building, or he may employ his skill in planning alterations to old property where the client desires modern comforts with ancient surroundings; but he must always keep in view the ultimate outlay. Architects are paid by a percentage upon the total expenditure they cause; but it sometimes happens that this rule is not practically applicable. The question then arises, how is the matter to be met in fairness to both parties? The recent case of "Carse *v.* Eastwood" in the High Court, though it decides no new legal point, is a good example as to how this can best be done. The plaintiff, an architect, was engaged by the defendant, an owner of a fine old house in a very pretty part of Surrey, and who wished to enlarge this by taking in some old barns which were down a hill from the residence. It was an awkward job, so to work in these outlying barns with the house and make the whole into one harmonious building combining the antique with modern comfort attractively. The defendant had said at first that a total of £4,000 to £5,000 was his limit. The plaintiff's plans would have needed more money. On this ground the defendant refused to accept them, and they were not used. Plaintiff now sued for 200 guineas as his fair fees for the work done. Mr. Justice Rowlatt, who heard the case, held that the figures first named were not put forward as a hard and fast rule. He thought defendant had in his own mind a limit of £6,000, and had not acted as if he considered plaintiff's plans were a breach of his contract as to the cost. The judge decided that plaintiff's claim of 200 guineas was a fair fee for the work he had in fact done, and gave him judgment for that sum. An architect always does his best to please his client, but in these matters of extensive alterations each side must give and take.

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LONDON SCHOOL OF ARCHITECTURE PRIZE DISTRIBUTION.

On Friday last, at 35, Bedford Square, the President of the Architectural Association delivered a very brief address to the students, but Mr. Henry M. Fletcher, M.A., was accompanied by his wife, who presented the several awards. The following order was adopted by taking the "first year" at the outset. This section included the "Howard Colls" Studentship, of the value of £15 15s,. which sum the Council wisely divided between Miss Ruth Lowy (£9 9s.) and Miss W. Ryle (£6 6s.). It will thus be seen that throughout the first session during which ladies have been enabled to enter as students they have more than justified their position as well as the resolution passed this time last summer. The diminution of the classes during the war may be one reason for this result, while possibly the pioneers among women who naturally came forward without delay may be presumed to possess the special ability necessary for such immediate success. However that may be, the lady students who have thus come to the front well deserved the congratulations so heartily accorded by the meeting; and in this connection it may be well to remember how, in the Royal Academy Schools for several years past, the women prize-winners have exceeded the records of the men in most subjects—excepting, however, architecture.

Miss Ruth Lowy's set of drawings displayed at the exhibition of works now on view at 35, Bedford Square, specially attracted our attention before the meeting began and before any intimation was made of the result of the Council's deliberations. In these annual shows of students' works it is much to be regretted that no distinguishing marks are attached to the drawings, and that in the majority of cases the names of the authors do not appear, while in those instances where the authors' signatures are added it is mostly impossible to read them. As the result of this absence of necessary information it is impossible even briefly to remark upon the works which the reviewer would otherwise be glad to notice. A long description, for which we have not the space, would be needed to identify particular works specially where as in these gatherings several designs appear of the same subjects. Without such detailed criticism neither the students themselves nor the readers generally would understand the points referred to. The mutual advantage of such information being made available prior to the actual proceedings is so obvious that in future it is to be hoped steps will be taken clearly to add the names of the competitors and post up the result of the awards on the works awarded prizes. Miss Ruth Lowy, the winner of the first place in the "Colls Studentship" contest, has her plans placed side by side with work contributed by Miss I. Graves, who won a third prize of books offered to the first year students, and Miss E. C. Cooke also obtained a similar distinction of equal value. Miss Graves includes in her set a scheme for an enclosed garden with tile coped walling, a gateway and a summer-house set outside the enclosure and raised on a platform approached by several steps, so that from the pavilion a glimpse of the garden is available from the windows. The simple character of the work is right enough, though lacking somewhat in interest, and the absence of appropriateness of the platform to the little pavilion is a fault. Either a parapet should have been added on the flank or the steps should have been carried round. Miss Lowy interested us more with her idea of a similar garden house, which is also in very elementary brickwork, but distinctly more original. Her V-shaped ended pavilion, with its open front, is set at the angle of 45° between stoutly piered pergolas running right and left. At its rear in the centre is a circular plain window set high up in the wall, and from this point of view in a public park, as seems intended, the effect is awkwardly akin to a convenience shelter. The few studies of the nude shown this year are hung sky-high, and seem below previous standards of success.

The second year prize winner takes a book prize, and Mr. C. H. Master, thus honoured, shows perhaps not the most successful water-colour sketch exhibited on this occasion, but certainly one of the best. We refer to his very appropriate garden pavilion set under the level of a terrace approached on both sides by regular big stairways leading down to the lily pool set in front of this pleasure house in the middle of the sunk garden. His tinted study referred to is graphically executed in browns, effectively and directly handled. The building is in stone, with sashed doors and windows. His plan and detail, right enough in their way, are disagreeably washed in with dirty colourings. The projected shadows on the plan only add to its confusion and serve no practical purpose. The same student's Market Hall, schemed on a reserved type of Commonwealth crudeness, has rather a Dutch idea about it, and, as such, is not of indifferent merit.

The Travelling Studentship, valued at £26 5s., went to Mr. E. C. Gentry, whose work we were unable to identify. Mr. A. J. Brown took the second prize among the third year students of £5 5s. value in books. The third prize was accorded to Mr. A. K. Chaudhuri. The Master's Prize fell to Mr. G. R. Galsworthy, Mr. A. J. Brown obtaining the "Jarvis Prize" of £40, and Mr. Chaudhuri the second prize in this connection. Among those who won nothing we noticed the work of Mr. P. R. Udwardia, who has managed to catch the spirit of English historic design rather well. As an instance, his wooden entrance of the Bloomsbury type may be named. His Portal to an Exhibition Building is not bad of its kind, with a metal grille spandril; also he shows a small theatre with a pedimented end of monumental character. We mention him really because the addition of his name to his exhibits enabled this to be done.

Among the rest we saw two or three indifferent designs for Diplomas in Architecture, a few poor cottage schemes and other minor buildings, the majority, perhaps, not very well set out on the sheets of paper used. The more ambitious designs seem frequently to be too hot in colour or drawn in a poster-like manner. Archaic types of architecture appear to be favoured in these compositions set before purple hills and garnished prominently with muddy brown cedar trees made to serve as a foil either to obelisk forms of building or rigid horizontal skylines. The effect is rather theatrical, and more than apt to be misleading. However, considering the difficulties of carrying on during the war, it certainly is a matter of congratulation that so much serious work has been accomplished during the absence of British students and the many difficulties the masters have had to contend with.

Captain Keith Falconer, M.B., R.A.M.C., only son of Mr. James G. Falconer, architect and surveyor, of Fort William, N.B., has been awarded the Military Cross

Our Illustrations.

NEW ROOD SCREEN, ST. CLEER CHURCH, CORNWALL.

The Church of St. Cleer, Cornwall, which is situated a few miles from Liskeard, lies somewhat out of the beaten track, and is, therefore, not widely familiar to visitors. The building, which is a characteristic example of the three-gabled type of Cornish churches, was, at the commencement of the century, in a very dilapidated state. But, owing chiefly to the generosity of the late Vicar of St. Neot's, the Rev. George Hermon, a thorough restoration was rendered possible, and was carried out from the designs and under the supervision of Mr. Geo. H. Fellowes Prynne, F.R.I.B.A. Remnants of oak found in the north and south aisle walls gave ample evidence of the position of the original rood screen and north and south chapel screens, the restoration of which was subsequently included, together with the parclose screens on either side of the chancel. The restoration of the church was carried out by Mr. S. Trehane, of Liskeard. The illustration is taken from an amateur photograph and enlargement in the Royal Academy exhibition.

SCHOOL MEDICAL DEPARTMENT BUILDING, SIMS STREET, SHEFFIELD, FOR THE EDUCATION COMMITTEE.

This building has been designed to accommodate the Central School Medical Department for the inspection and treatment of scholars, under the Sheffield Education Committee, a number of small branch clinics for outlying districts of the city forming part of the committee's scheme. Before the war it was proposed first to proceed with the erection of the middle block and E wing, which involves some temporary re-arrangement, as indicated on the plans, pending the completion of the whole building. The accommodation includes general waiting hall on ground floor, rooms for the clerical staff, consulting rooms for chief medical officer and assistant medical officers, these being provided with small dressing lobbies, which would expedite the examination of scholars.

X-ray installation, consultation and treatment rooms are also provided for visiting specialists. A small clinic and room for minor operations, nurses' common room, together with laboratory and caretaker's apartments are situated on the top floor. Accommodation in the basement provides store-rooms for records and equipment, heating apparatus and hot-water supply, and a set of ablutionary baths for scholars.

The building is proposed to be of brick, with local stone dressings sparingly used, slated roofs, and floors and stairs of reinforced concrete. The estimated cost of the first portion was £10,200, within which amount tenders were obtained, but the erection had to be postponed until after the war. The architect is Mr. F. E. P. Edwards, F.R.I.B.A., F.R.San.I.

To-day we give the elevations and plans. Other illustrations will appear at an early date.

HOUSING OF THE WORKING CLASSES, ENGLAND AND WALES. FIRST PRIZE DESIGN, CLASS C, SOUTH-WEST URBAN AREA.

We illustrate this week the first premiated design, Class C, South-West Area, by Mr. W. A. Greenen. The chief objects kept in view in this design were economy and simplicity in outline, with the maximum amount of comfort and the minimum amount of waste space. The exterior walls are 11in. cavity, local brick facings, roof covered with tiles. The interior walls of brickwork, all partition walls on first floor of breeze concrete. The floors on ground floor are 4in. cement concrete, finished with a patent flooring, except to scullery, coals, and w.c., which are to be finished in cement. The first story floors are of concrete, reinforced with "Hyrib" 2½in. thick and finished with a patent flooring. All lintels are of reinforced concrete. The staircases are constructed of concrete blocks. It will be noted that the minimum amount of timber is used throughout.

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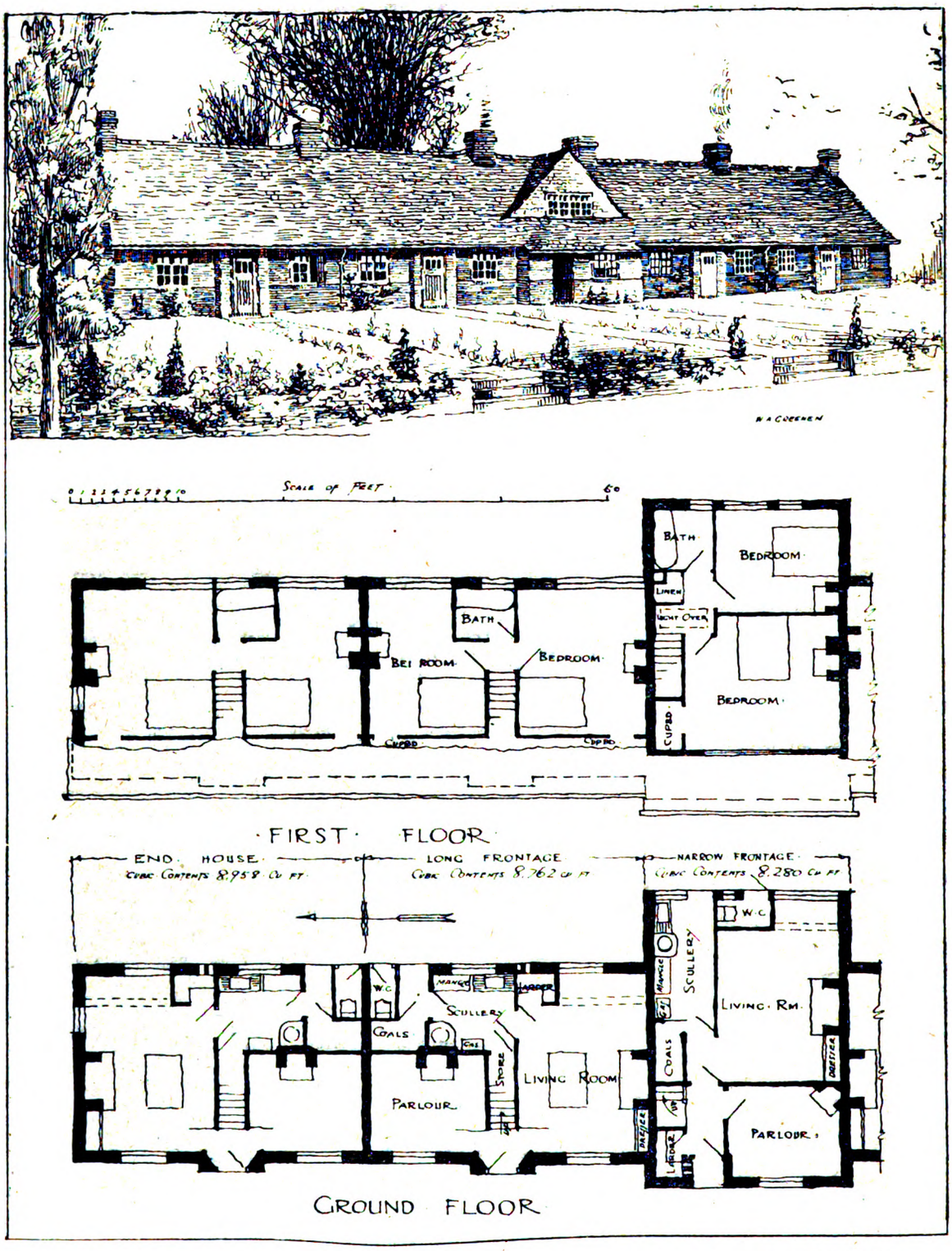

HOUSING OF THE WORKING CLASSES, ENGLAND AND WALES.
FIRST PRIZE DESIGN, CLASS C, SOUTH-WEST AREAS, URBAN DISTRICTS.
Mr. W. A. GREENEN, Architect.

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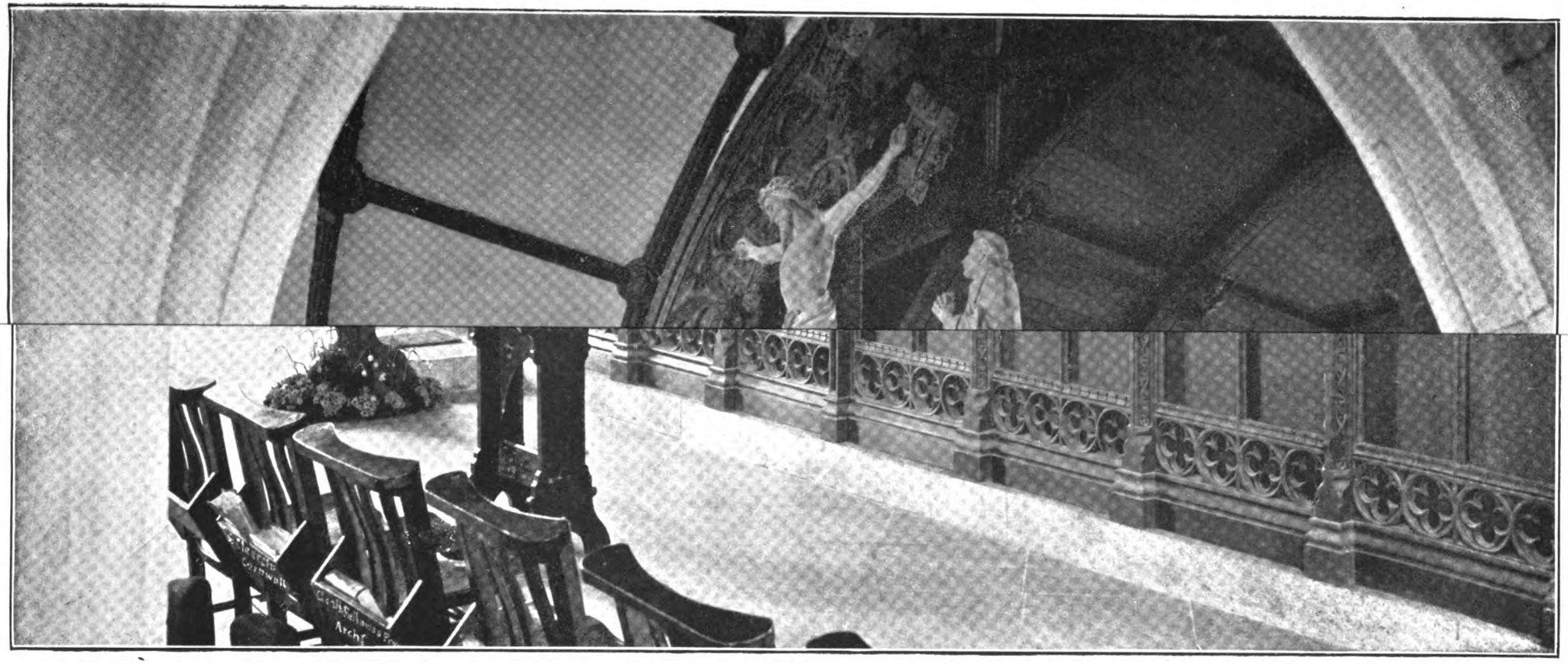

NEW ROOD AND PARCLOSE SCREENS, ST. CLEER, CORNWALL.—Mr. G. H. Fellowes Prynne, F.R.I.B.A., Architect.

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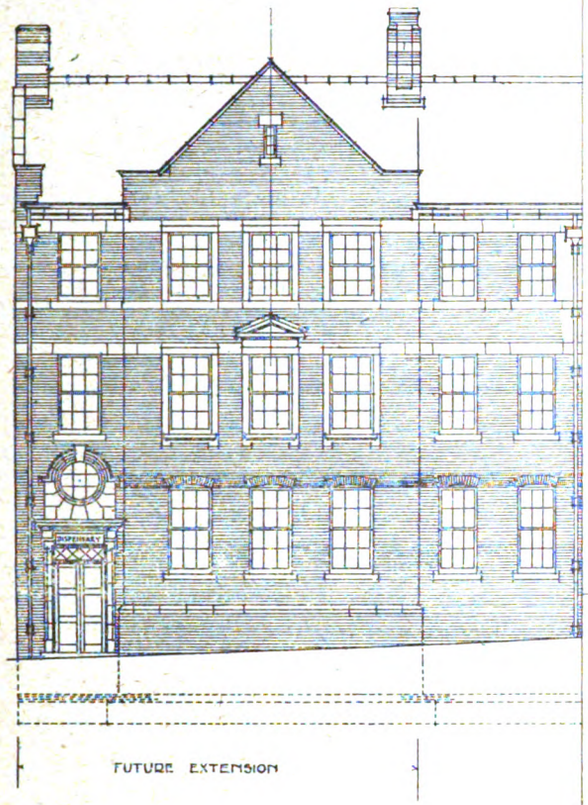
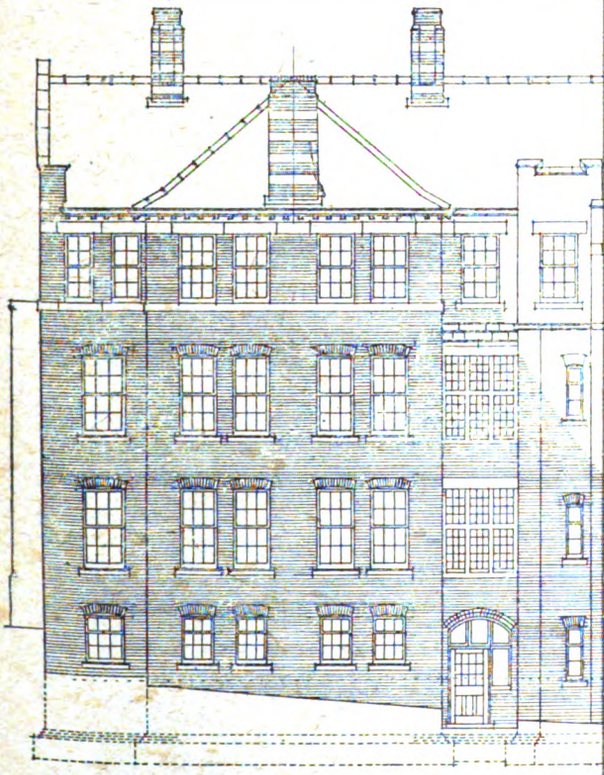
CITY OF SHEFFIELD : EDUCATION
SCHOOL MEDICAL DEPARTMENT

DRAWING NO 2967



DATUM 205.00

S·EAST ELEVATION
TO LEE CROFT



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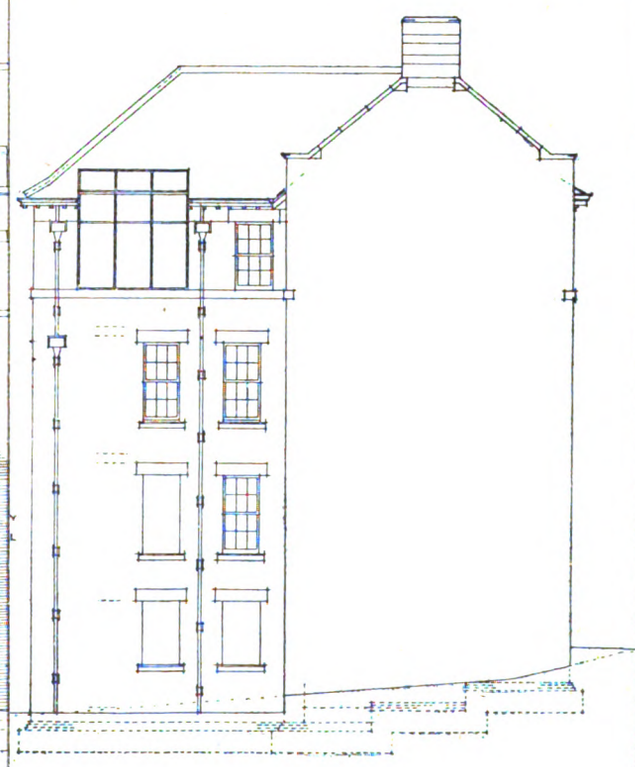

E.R.P. EDWARDS F.R.I.B.A.
CITY ARCHITECT

N·WEST ELEVATION
(FUTURE EXTENSION)

SCHOOL MEDICAL DEPARTMEN

EDWARDS, F.R.I.B.A., City Architect.

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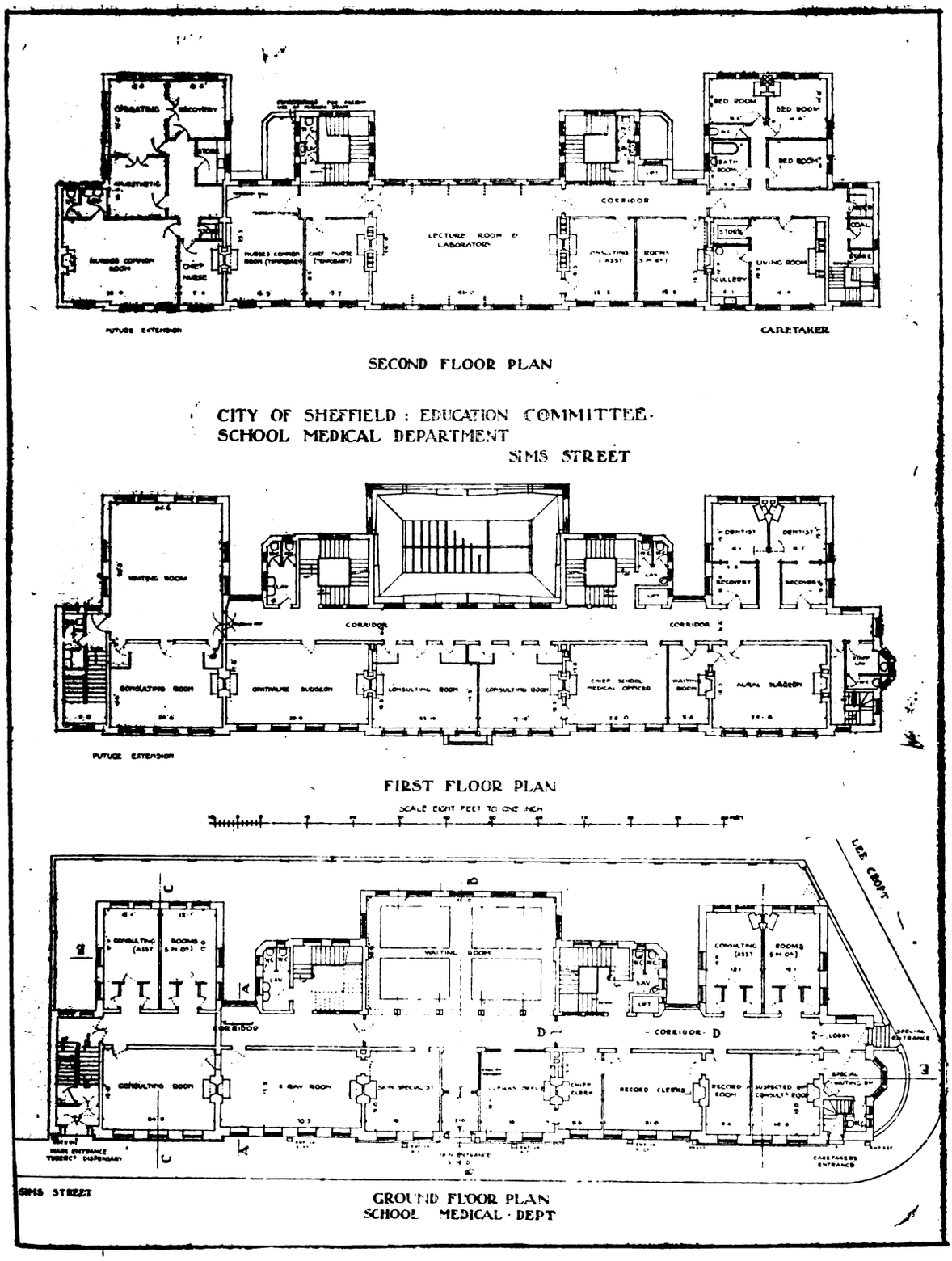

SCHOOL MEDICAL DEPARTMENT, SHEFFIELD EDUCATION COMMITTEE.
SIMS STREET, SHEFFIELD.
Mr. F. E. P. Edwards, F.R.I.B.A., Architect.

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WATER AND ITS INFLUENCE ON CONCRETE MIXING.

Somewhat revolutionary results have apparently been established by a series of tests carried out in the Structural Materials Research Laboratory of the Louis Institute, Chicago, in regard to the part played by water in the making of concrete. Describing them in the *Engineering News Record*, Professor D. A. Abrams is of opinion that the amount of water used in the mixing is far and away the most important factor, and that the fundamental rôle played by water has been entirely overlooked in previous research and practice.

The conclusion was brought out by a series of compression tests of about 1,600 6 x 12-in. concrete cylinders, made up as follows:—

Mix cement-aggregate.	Range of sizes of aggregates.	Consistency.
1 : 15		
1 : 9	0-14-mesh sieve	Different consistencies for each mix and aggregate.
1 : 5	0- 4-mesh sieve	
1 : 3	0- ¾-in.	
1 : 2	0-1½-in.	
1 : 1	0-2 -in.	
1 : 1/3		
Neat		

The mixes used covered a wide range, as did also the grading of aggregate and consistency. The aggregates consisted of two sizes of sand and mixtures of sand and pebbles graded to the sizes shown. The mix is expressed in terms of volumes of dry cement and aggregate, regardless of grading—i.e., a 1:5 mix is made up of 1 cu. ft. cement (1 sack) and 5 cu. ft. of aggregate as used, whether a sand or a coarse concrete mixture.

This series gives valuable information on the effect of changing the quantity of cement, the size of the aggregate, and the quantity of water. The effect of many different combinations of these variables can be studied. One set of relations gives the effect of amount of cement-using aggregates of different size and grading; another set of relations gives the effect of different quantities of water, varying both mix and size of aggregate. In all respects the tests bear out the indications of earlier and later series, and reveal the true relation between the strength and the proportions of the constituent materials in concrete. The figure shows the relation between the compressive strength and the water content for the 28-day tests. The water content of the concrete has been expressed as a ratio of the volume of cement, considering that the cement weighs 94 lb. per cu. ft. Distinguishing marks are used for each mix, but no distinction is made between aggregates of different size or different consistencies.

When the compressive strength is plotted against the water in this way, a smooth curve is obtained, due to the overlapping of the points for different mixes. Values from dry concretes have been omitted. If these were used we should obtain a series of curves dropping downward and to the left from the curve shown. It is seen at once that the size and grading of the aggregate and the quantity of cement are no longer of any importance, except in so far as these factors influence the quantity of water required to produce a workable mix. This gives us an entirely new conception of the function of the constituent materials entering into a concrete mix, and is the most basic principle which has been discovered in our studies of concrete.

The equation of the curve is of the form

$$S = A/B^x$$

where S is the compressive strength of concrete and x is the ratio of the volume of water to the volume of cement in the batch, A and B are constants whose values depend on the quality of the cement used, the age of the concrete, and curing conditions.

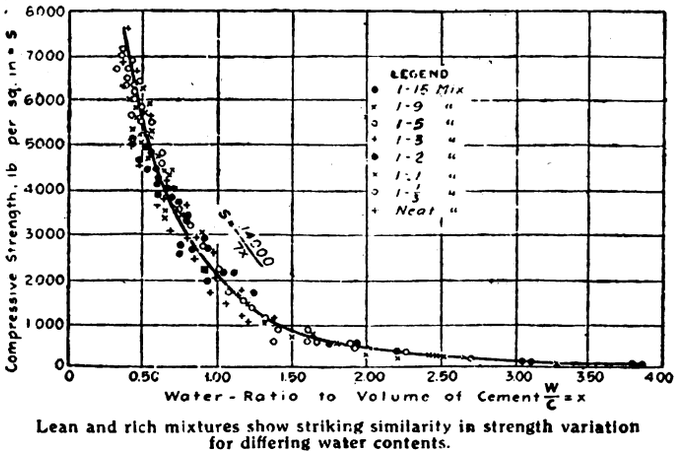
This equation expresses the law of strength of concrete so far as the proportions of materials are concerned. It is seen that for given concrete materials the strength depends on one factor only—the ratio of water to cement. Equations which have been proposed for this purpose contain terms which take into account such factors as quantity of cement, proportions of fine and coarse aggregate, voids in aggregate; but they have uniformly omitted the only item which is of any importance—the water.

The relation given above holds so long as the concrete is not too dry for maximum strength and the aggregate not too coarse for a given quantity of cement—in other words, so long as we have a workable mix.

For the conditions of these tests the equation becomes

$$S = 14{,}000/7^x$$

Other tests made in this laboratory have shown that the character of the aggregates makes little difference if it is clean and not structurally deficient. The absorption of the aggregate must be taken into account if comparison is being made of different aggregates.



Lean and rich mixtures show striking similarity in strength variation for differing water contents.

In certain instances a 1:9 mix is as strong as a 1:2 mix, depending on the water content. The strength of the concrete responds to changes in water, regardless of the reason for these changes.

It should not be concluded that these tests indicate that lean mixes can be substituted for richer ones without limit. We are always limited by the necessity of using sufficient water to secure a workable mix. So in the case of the grading of aggregates. The workability of the mix will in all cases dictate the minimum quantity of water that can be used. The importance of the workability factor in concrete is therefore brought out in its true relation.

The reason a rich mix gives higher strength than a lean one is that a workable concrete can be produced by a quantity of water which gives a lower ratio of water to cement. If an excess of water is used we are simply wasting cement. Rich mixes and coarse, well-graded aggregates are necessary as ever, but we now know just how these factors affect the strength of the concrete.

Practical use may be made of the curve in estimating the relative strength of concretes in which the water content is different for any reason. For example, a concrete mixed with 7.5 gallons of water (1 cu. ft.) to 1 sack of cement (allowance being made for absorption of aggregate) gave a strength in this series of 2,100 lb. per square inch ($x = 1.00$). For $x = 0.80$ (6 gallons of water per sack of cement) we have 3,000 lb. per square inch; for $x = 0.75$ (5.6 gallons) 3,300 lb. per square inch. Concrete in a 1:4 mix (same as usual, 1:2:3 mix with a coarse sand) should be mixed with 5½ to 6 gallons of water per sack of cement.

The importance of any method of mixing, handling, placing, and finishing concrete which will enable the work to be done with a minimum of water is at once apparent. It now seems that practically all faulty concrete work can be traced to the use of too much water.

THE ROYAL ACADEMY AND WAR MEMORIALS.

CENTRAL ADVICE COMMITTEE.

A Conference on War Memorials was held at the Royal Academy on June 26, when representatives of the Church, of Government Departments, and of the principal artistic and other institutions concerned were present, including Sir Lionel Earle (Secretary, Office of Works), Mr. R. C. Norman (Chairman, L.C.C.), Mr. H. T. Hare (President, R.I.B.A.), and Mr. R. W. Shirley (Master, Art Workers' Guild).

Sir Edward Poynter, P.R.A., who took the chair, after reading a circular of general advice, which was widely distributed last March by a Royal Academy Committee on War Memorials, said that the time had now come for taking further steps to secure combined, instead of isolated, effort in erecting memorials, and to protect churches and public buildings from unsuitable treatment in setting up monuments of the war. He hoped that a strong and representative committee would be appointed to unify and strengthen the efforts of all who had at heart the right direction of public opinion on this important matter.

Lord Plymouth expressed his keen sympathy with the object which the Royal Academy had in view, and urged that a strong committee of members of the Royal Academy and other experts should take every possible step to keep before the public the pre-eminent claims of art in the matter of patriotic commemoration.

Lieut.-Colonel Sir A. Leetham said that Lord Milner had deputed him to attend the conference and to assure the Royal Academy that the Army Council were in full accord with the proposed scheme for advising on the subject.

Lord Crawford said too often the dignity of a public building had been spoilt by the small personal memorials placed in it. The English were supposed to be specially individualistic, but their successes in the war were due to collective effort, and the function of a committee of advice would be to induce collective effort also in the permanent records of these achievements. It was important also

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that the artist, the creator of the work which formed the memorial, should have as free a hand as possible. The Royal Academy, with its high traditions and honourable status, was the proper authority to organise a strong body of artistic opinion, to which the public would naturally turn as the central panel of advice on the whole subject. He was sure that by tempering enthusiasm with discretion they would establish a system of artistic control which would be of great and permanent usefulness.

Sir Alfred Mond (First Commissioner of Works) expressed his sympathy with the movement, and hoped it would succeed in saving the country from the erection of unsightly objects intended to commemorate the war. Merely utilitarian buildings for this purpose should be discountenanced in favour of artistic monuments. Possibly the committee might formulate a series of authorised types of design. The available sites should be carefully studied beforehand, so that definite schemes might be ready when the memorial was to be erected. He trusted that the organisation started by the Royal Academy would develop into a permanent influence for the right guidance of artistic taste in the country.

Sir Frederick Kenyon (Director, British Museum) discussed the best means of dealing with the innumerable small personal memorials which were certain to be set up in every locality.

The Dean of York, besides the building of memorial chapels and the use of crypts, suggested the clearing away of the ugly structures which obscured many of our finest buildings, and so forming a handsome space.

On the motion of Lord Plymouth, seconded by Mr. C. J. Holmes (Director, National Gallery), it was resolved that the conference should form a general committee, which would appoint an executive committee to carry out the various suggestions agreed on at the meeting.

WHY NOT A WHEEL TAX FOR ROADS?

By CHAS A. MULLEN.*

An article appearing in a recent trade publication, by Mr. George C. Warren, opens again the controversial subject of how we shall pay for our pavements. One possibility not dealt with by Mr. Warren is charging them to the public through a wheel tax, levied by the city, county, or State. The writer would like to see this idea fully exploited, or to learn where it is in vogue, and how it is working, if at all.

Why do we build roads—and pave them? For wheels. No other reason. Were it not for vehicular traffic—other than bicycles and baby carriages—sidewalks and footpaths alone would serve our purpose. And since we build the pavements for the wheels, wouldn't it be logical to pay for them through the wheels?

Some disgruntled person may remark at this point that we have paid for most of our pavements "through the nose." Or some critic may suggest that, if we pay for our pavements through the wheels, "Why should we not pay for our sidewalks through our shoes?" The first may be true and the last may not be so foolish as it at first seems; but at present hadn't we better stick to the wheels and the vehicles they support?

It has always seemed to the writer that a tax should be collected through a logical channel. At present we are fooling ourselves very badly as to the cost of highway transportation. A railway must maintain its roadbed and collect the cost thereof in its freight charges and passenger fares; while an autobus line, delivery wagon or auto truck, or even a passenger automobile, does not pay for its roadbed, and the expense thereof is not figured into its cost of operation.

It is true that in some of the States they are taxing automobiles and using the proceeds for road maintenance. This is a step in the right direction, but why not carry the principle to its logical conclusion by securing all the money for road building and maintenance through a wheel or vehicle tax? If roads are for vehicles, and vehicles alone, why should the general city tax, or the abutting property, pay for them, instead of the owners of the vehicles, to whom the wheel tax would be charged? They, in turn, would charge it into the cost of their services to the community, so that, finally, it would rest, as always, upon the ultimate consumer, but through the logical and proper channel, instead of in the present unsatisfactory way.

Illogical procedure may usually be depended upon to produce illogical results. In the city of Montreal, where the writer now spends most of his time, and which pays for both its pavement construction and pavement maintenance out of the general city fund, the illogical results have fully materialised. On the whole, we probably have the worst paved streets in North America.

Because of a stringency in municipal finance, charged by some to war conditions, but due much more directly to purely local causes, quite painful for a citizen of Montreal to mention, the "city fathers" thought it wise to neglect the street pavements. Thereby they avoided spending some money from the general city for those particular years when these particular "city fathers" were appealing to the citizens for their suffrage, and they were happy.

Money was saved to the particular general city fund, but in doing so they wasted a lot of money for the community. After a few years of this kind of "saving," the streets of Montreal are so bad that they can be traversed neither with pleasure nor in safety. Trucking firms were, even last year, threatening to sue the city for damages, because of the excess wear and tear on equipment and the greater expense of smaller loads, made necessary through the ill-repair of the pavements.

Now, what the general city fund "saved" in dollars and cents, was paid out, many times over, in equally good dollars and cents, by the vehicle owners using the streets of the city. They paid in repairs to wagons and automobiles and in excess horse-power, both in the nature of gasoline and oil and of the old animal flesh-and-blood kind, required to move a given tonnage between given points. They paid heavily, and they kicked to the "city fathers," to no purpose.

THE WHEEL TAX.

Were the city of Montreal paying for its pavement construction and maintenance by a wheel or vehicle tax this condition would not exist very long. The vehicle owners would not be slow to realise that they could get the same results at less cost by paying their money into a proper tax fund to build and maintain pavements, rather than by paying it to the wagon-smiths, the garages, the horse dealers, and in excess labour costs to men who are swearing at the discomfort to themselves growing out of the unkept street surfaces.

Some may object to the wheel tax as a means of paying for road service on the ground that it too closely resembles the old toll roads system. To such it can be said that there were two great objections to the collection of tolls—first, too much of the amount of the tax was spent in the collecting thereof; and, second, the toll roads were privately instead of publicly owned. Of these objections, to the writer, the last only seems fundamental: the first is a matter of practical application that is overcome by the wheel tax.

Another objection that might be raised is that we are getting away from free public roads. But nothing is free; we are paying for them now, only by a different and less satisfactory method. Nothing that is the result of labour can ever be free. Natural resources may be, but not manufactured products, such as roads. Someone must always pay; so, why not have the burden fall equitably upon the road-users through a wheel or vehicle tax?

The writer is not ignoring the fact that so radical a change in the method of paying for our improvements would meet with a lot of opposition from the status quo. Neither does he claim to have suggested anything new; for the plan was, he is quite sure, advanced by others long ago. What he does suggest is that we really begin to think about doing something along these lines

* Director of Paving Department, Milton Hersey Co

DISCOLORATION OF BRICK WALLS.

Although this can be eliminated in the construction, yet it requires a good deal more supervision than average work receives, especially nowadays. What most want is a remedy after the wall has been built. The following extract from the *Painters' Magazine*, in regard to stains, may prove of value:—

"We have known of a red-brick stain that was made by mixing bright Venetian red with water into a pulp, pressing it through a sieve to break up lumps that were formed in mixing, and then adding enough stale ale or beer to make the stain of a proper consistency. To each gallon of this mixture was added one-quarter of a pound of calcined green copperas (iron sulphate) previously beaten up with a portion of the stain to a thin batter. This is the mordant or fixture without which the stain would finally wash off from the effects of rain. This calcined copperas is produced by heating green copperas in an unglazed earthen pot, thus driving off the combined water; under this process the copperas falls into a dry, whitish powder.

"A more durable and permanent stain is made with Venetian red that has been ground in pure linseed oil in stout paste form, or, if the stain is to be of a lighter shade, a mixture of Venetian red and French yellow ochre, both ground fine in linseed oil and beaten up with a small portion of a good turpentine japan to a smooth semi-paste, gradually adding in small quantities while stirring a mixture of one part (by measure) of 90 degs. benzol or good solvent coal tar naphtha and four parts (by measure) of turpentine until the proper consistency of stain is secured. Strain through cheese-cloth and throw away the coarser particles, as these would remain on the surface and be of no benefit in sealing the pores of the brick. An excess of oil in the stain is apt to produce 'shiners.'"

It has been noticed that efflorescence is more pronounced under the copings, sills, belt courses, etc., or wherever a part of the building has been subjected to a greater wash by water. This indicates that the mortar, as well as the brick, is absorbent, causing the walls to become thoroughly soaked during the winter months, while the warm rays of the sun attract the moisture to the exterior, bringing with it the lime, magnesia, and alkali salts contained in both the brick and the cement mortar.

It is agreed by all interested in brick construction that both brick and cement mortar are absorbent, yet little has been done to overcome this objectionable, serious, and dangerous obstacle. Hydrated lime will add to the plasticity of the mortar, increase the density, and, being a water retainer, will add crystallisation when used in places where it is difficult to apply water at frequent intervals. Tests have repeatedly shown that slabs containing 10 per cent. hydrated lime, when taken out of the water after one hour, will contain a larger percentage of water than a similar sample of cement and sand, yet on the surface the lime sample is apparently bone dry.

A remedy for the above problem, now being tried out, and which has withstood a test of over two years, is impervious cement mortar, to consist of (a) one part approved portland cement, (b) three parts sharp, clean sand, showing not over 35 per cent. voids by water, (c) 10 per cent. of weight of the cement of hydrated lime (sufficient to add to the plasticity of the mortar and retain enough water to perfect crystallisation), (d) 2 per cent. of weight of the cement Medusa paste waterproofing. Each gallon (eight pounds) to be mixed with equal parts of water, later adding twenty more gallons. All mortar to be gauged with this solution.

If the sand is damp a one to fifteen solution should be used to offset the moisture already in the sand. All exterior brick and stone work to the depth of twelve inches should be embedded in this mortar.

The Wilmslow Urban Council, owing to the high cost of labour and materials, has decided not to proceed with its scheme to build a new town hall and public offices.

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Our Office Table.

In the Metropolitan Museum of Art, New York, is the tomb of Perneb, originally erected at Memphis about 2650 B.C. Mr. M. Tooh has analysed the pigments used and gives an account of them in a paper quoted by the *Chemical News* of June 7. The pigments are red, yellow, blue, green, grey, and black. The usual idea that the red used by the Egyptians was red ochre appears to be erroneous; the red found in this instance proved to be hæmatite, which contains much more iron oxide than the ochres. All the yellows used on the tomb were composed of the native ochre, which is clay coloured with iron-rust. The Egyptian blues are beautiful colours, ranging from a light sky-blue to a dark ultramarine. A microscopical examination of the dark blue showed it to be of the nature of a powdered "smalt" glass or porcelain; this powder has been rubbed into the pigmented surface and allowed to set with Nile clay or mud, which, being slightly alkaline, acts as a cement, and has both setting and binding properties. A greenish-blue pigment examined was composed of azurite, a hydrated carbonate of copper; whilst the green pigment was a mixture of malachite, azurite, and clay. The grey was limestone mixed with charcoal or carbon, and the black was a carbon black, composed of charred wood or burnt bones. It has been assumed that the Egyptians used white of egg as a binder, but no trace of any albuminous binder was found in the specimens under notice; they did, however, show evidence of the use of glue or gelatin. The pigment in two paint-pots, evidently thrown away by the workmen, was found to be hæmatite mixed with limestone and clay.

At last Wednesday's meeting of the Liverpool City Council Mr. Goodwin moved, as an amendment to a minute of the Libraries, Museums, and Arts Committee, an instruction that the curator of the Art Gallery (Mr. E Rimbault Dibdin), due to retire, at the age of sixty-five years, on August 25, be continued, subject to three months' notice, at a salary of £315, plus an augmented superannuation allowance of £235, which would make his total emoluments £550 per annum, or equal to his present salary. Mr. F. C. Bowring seconded. Mr. H. A. Cole supported the motion. Alderman Burgess opposed, pointing out that as the Art Gallery was being absorbed for wartime services, there could be little work for the curator and staff in the near future. Alderman Heald hoped the Council would support the majority of the committee, and reject the amendment. Sir Archibald Salvidge supported the amendment. After further debate, the amendment was rejected—24 for, 50 against—the consequence being that the retirement and superannuation will take effect next month.

Mr. J. Goodchild, interim district surveyor for Islington, North, has resigned as from July 31, 1918, or from such earlier date as may be arranged. Mr. Goodchild has been a district surveyor for twenty-eight years, and upon the termination of his services the L.C.C. Building Acts Committee have caused a letter to be sent to him expressing their appreciation of the efficient manner in which he has carried out his duties. The Committee has appointed Mr. E. W. Lees, district surveyor for St. Pancras, North, to be interim district surveyor for Islington, North, in place of Mr. Goodchild. Upon receiving this appointment Mr. Lees has surrendered his position as interim district surveyor for Bethnal Green, West, and to this position the Committee has appointed Mr. R. H. J. Mayhew, district surveyor for Hackney, East. The new appointments of Mr. Lees and Mr. Mayhew are of a temporary nature and will continue only during the pleasure of the Council. Mr. Monier Williams, district surveyor for St. George, Hanover Square (Belgrave and Pimlico division), has moved his office from No. 11, Eccleston Place to No. 99, Buckingham Palace Road, and in accordance with the provisions of section 141 of the London Building Act, 1894, the Committee has approved the position of the new office.

The Committee has agreed to Mr. R. Elsey Smith, district surveyor for Wandsworth, West, retaining the Chair of Architecture and Building Construction at University College for another year from July 31, 1918, and has consented under section 142 of the London Building Act, 1894, to the appointment of deputy district surveyors in eight cases.

Standing order No. 380 of the L.C.C. provides that Mr. W. E. Riley, F.R.I.B.A., the superintending architect, and Mr. John Briggs, the chief assistant architect, may take steps to carry into execution the provisions of Part IX. of the London Building Act, 1894, relating to dangerous structures. The expenditure in this connection, which is mostly recoverable, in some cases exceeds £50, and such expenditure has always been passed without reference to the Finance Committee, although no exception in respect of such expenditure is made in standing order No. 235. It would appear desirable that standing order No. 235 should be amended by the inclusion of such expenditure in the list of exceptions enumerated therein. The General Purposes Committee therefore recommends:—(a) That standing order No. 235 be amended by the insertion of the following paragraph: Building Acts Committee—Expenditure incurred in carrying into execution the provisions of Part IX. of the London Building Act, 1894, relating to dangerous structures. (b) That regulations Nos. 595F, 65A, 94, 100, 103, 155, 180, 188, 252, 307 (b), 320 (a), 335, 352, 490, 527, 576 (b), and 687E be amended as indicated hereunder, and as thus amended, be approved.

A meeting of delegates of all rowing clubs has been called for Wednesday (to-day), at the Kensington R.C. Clubhouse at Hammersmith. The object is to consider the appointment of a deputation to wait on members of Parliament, especially those connected with river constituencies, and otherwise to organise the rowing community with a view to opposing in Parliament the second reading of the Brentford Gas Bill. If the Bill becomes law the Brentford Gas Company will be able to erect a gasworks on land belonging to the Duke of Devonshire, known as "the Duke's Meadows," which front the river on the Middlesex shore at Chiswick, just below Barnes Bridge. It is considered that the erection of a gasworks on this site, attended with the traffic of tugs, barges, etc., and the mooring of barges, would ruin this largely used reach of the river, which forms part of the Championship and University courses. We trust the opposition may be successful.

Organised by the Edinburgh National Society for Women's Suffrage, a conference on housing was held in the Oddfellows' Hall, Edinburgh, last Saturday afternoon. Mrs. Shaw M'Laren, who presided, read a letter from Mr. C. E. Price, M.P., in the course of which he said that the recent report on the condition of the housing problem in Scotland should make all hearts burn with shame. He had for years called public attention to the deplorable condition of things existing in our midst. He regretted to say his words had fallen upon deaf ears. But the public conscience was beginning to realise that the housing of our people lay at the root of all our well-being as a nation. He had long believed that the housing problem could not be properly dealt with without first attacking the land problem. Years ago the Sheffield Corporation brought 42 acres of land for workmen's housing at a cost of £100 per acre. At a later date the adjoining 14 acres were purchased at £510 per acre, the increased value being brought about by the community as a whole, and to which it really belonged. If this land had been taxed at its capital value, it would years before have been forced into use, and houses would have been built for the people. Similarly if the vacant land in Edinburgh was rated and taxed at its capital value instead of its assessed rental, its owners would have sought to put the land to use instead of being able, under the present system, to hold it for an increased price. This was the aspect of the housing problem which demanded the most earnest consideration. Addresses on the present housing conditions were given by Miss Mewhort, who dealt with the situation in towns; Mrs. George Kerr, a member of the Women's Housing Committee appointed by the Secretary for Scotland, who spoke of the country, with special reference to Skye; and Councillor Young, who chiefly referred to the mining areas, remarking that however bad housing in cities might be, it was paradise compared with miners' rows.

In addition to our note last week on the death of Mr. Edward Cookworthy Robins, F.S.A., F.R.I.B.A., the *Journal of the Royal Society of Arts* states that he became a member of that society in 1870, and served on the Council from 1887 to 1890, when ill-health compelled his retirement from all work, public and private. As a member of the Court of the Vintners' Company he took an active part in the movement for the promotion of technical education in the City of London, the result of which was the establishment of the City and Guilds Institute. In 1882 he read a paper before the Society on English and Foreign Technical Education. In the same year he was appointed by the Council Architect to the Society, and in that capacity took charge of the renovations and improvements made in the meeting-room and the library, including the ventilation of the former. He had a considerable practice as an architect from 1858 to 1890. Among his executed works were Weeley Church, Essex, the Camden High School for Girls, the Bedford Grammar School, and the Merchant Venturers' School, Bristol. He was one of the pioneers of modern sanitation, took great interest in and designed the fittings for science schools and laboratories, and published a book on the subject.

Correspondence.

ARCHITECTURAL ASSOCIATION RED CROSS DETACHMENT (LONDON 43rd).

VOLUNTEER FIELD AMBULANCE UNIT.

To the Editor of THE BUILDING NEWS.

Sir,—May I appeal once more through your columns for recruits for our Red Cross detachment? We are now raising a Volunteer Field Ambulance Unit, which will be on the same footing as other branches of the Volunteer Force. Its services will be utilised in case of national emergency, and in the meantime its members will receive training by medical officers in first aid and field ambulance work generally. A free issue of uniform and kit will be made immediately the unit is at full strength.

Men of all ages in Grades 2 and 3 are eligible for enrolment, provided they have been exempted from military service, and it should be noted that men granted exemption by Tribunals conditional upon their joining the Volunteer Force will satisfy this requirement (if they are graded 2 or 3) by joining the Volunteer Field Unit. All those wishing to respond to this appeal are requested to communicate with me at the Architectural Association, 35, Bedford Square, W.C.1.—I am, Sir, yours faithfully,

F. R. YERBURY.

Mr. Sutcliffe, of the borough engineer's office, has been appointed borough architect and building surveyor of Huddersfield.

Mr. Robert Young, a partner in James Young and Sons, contractors, died on the 1st inst. in Edinburgh while walking in the street. The eldest son of the senior partner of the firm, he carried out many important contracts for the North British Railway Company, the Edinburgh and District Water Trust, the Mid-Lanark Water Trust, the Edinburgh Town Council, and other bodies.

On Monday week a presentation was made to Mr. John Rostron, of 10, Fenton Street, Featherstall, who is thirty-eight years of age, and has had twenty-two years' service in the British Army. He fought in the Boer War and re-enlisted to serve in the present war with the Coldstream Guards, in which regiment he held the rank of sergeant. During his service he has been awarded the Queen's South African Medal, the Russian Order of St. George, the Mons Star, and the Distinguished Conduct Medal. Before the present war began Mr. Rostron was an employee of the Builders' Supply Stores, Rochdale. He is now employed as a slater by Mr. A. Rushton, of Littleborough.

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July 17, 1918. Volume CXV.—No. 3315.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

New Buildings, London School of Medicine for Women, Hunter Street (Royal Free Hospital), W.C. View of arcade and entrance front, with larger photograph of the portal. Messrs. H. V. Ashley and Winton Newman, FF.R.I.B.A., Architects.

St. John's Church, Woking, Surrey. View of West Front, North Elevation, and Plan. Mr. Briant A. Poulter, F.R.I.B.A., Architect.

School Medical Department Building, Sims Street, Sheffield, for the Education Committee. Mr. F. E. P. Edwards, F.R.I.B.A., Architect. Sheet of Working Drawings of four sections.

Currente Calamo.

The following letter has been sent to Mr. Lloyd George and the Ministry of Munitions by the London Master Builders and Aircraft Industries Association with reference to the recent strike of aircraft workers:—

July 11, 1918.

Sir,—As a number of the members of my association are affected by the London aircraft strike, I am instructed to place on record this association's view of the very unsatisfactory way in which the Ministry of Munitions has dealt with this matter. There can be no other opinion formed in reading the Press notice than that the Ministry of Munitions has in effect censured the firm struck against, whereas the true record is that the firm only endeavoured to maintain proper order and procedure in its establishment, which was met with defiance by the man Rock, who has not had the support of the recognised trade unions.

My association is most astonished at such an attitude, having regard to the opinions expressed by the deputation who attended before Mr. Wolfe and Sir Thomas Munro and others on Monday last, when several of my members were present.

My association is also surprised to find Labour being consulted to the exclusion of the employers' association, considering the questions were such as to involve the whole industry.—I am, Sir, your obedient servant,

S. B. Depree (Secretary).

It is possible that further proceedings pending may furnish information, at present the censure by the Ministry of Munitions of the firm struck against seems, to say the least, premature, and the exclusion of the Employers' Association inexplicable.

We wonder how many more naturalised aliens besides Mr. Wendt have in the recent past been quite ready to join the Army but refused leave as "indispensable," and whether, now, any of them will be declared "not indispensable," and why? Mr. Wendt's case, it will be remembered, was mentioned in the House of Lords on Monday week by Lord St. Davids, urging that naturalisation certificates should be revoked *en masse*. His lordship is himself a member of the Road Board, but he confessed that it was not until the question was asked in the House of Commons that he knew anything about the case. Then he demanded a meeting of the Board, when they were told that Mr. Wendt was indispensable. He was born in Dresden, of a German father and an English mother. He came to this country at eighteen, and worked for nine years—eight of them on railways that Sir George Gibb (the chairman of the Road Board) was connected with. He never took the trouble to be naturalised. Then Sir George Gibb went to the Road Board. Mr. Wendt went with him, saw a chance of getting into the Civil Service, and for that he was naturalised—in 1910, the year the Road Board was formed! The Road Board was now making and mending roads for the Army, the Navy, and the Air Force, and Mr. Wendt knew all about everything they were doing. If he was not considered fit to go into the Army or to go into an office, he must be paid, according to the rules of the Civil Service, £500 a year for life. That was intolerable. Lord Sandhurst, in reply, said the facts were as stated by Lord St. Davids. When Sir George Gibb went from one line of business to another—from the North-Eastern to the Underground Railway, and finally to the Road Board—he took this man with him. Mr. Wendt had attested under the Derby Scheme and had made three or four applications to be allowed to join up, but was considered indispensable. He had since been declared not to be indispensable, and he would shortly be called to military service. Whether or no the statements of Lord St. Davids were correct, as admitted by Lord Sandhurst, we cannot say, and we offer no comment on them. That he *did* apply three or four times to join the Army seems evident. Are there any more unwilling "indispensables" about, and why?

In a letter to our contemporary *The Engineer*, Capt. Arthur F. Wickenden, A.R.I.B.A., P.A.V.I., A.M.I.C.E., R.A.F., dealing with the future of the professional classes, recurs to the necessity for the consolidation of the representative institutions of our own and kindred bodies. As he points out, at the present time policies of social and industrial reconstruction are being discussed on all sides, and the various sections of the community are organising themselves so as to be prepared for the great economic struggle which seems inevitable at the conclusion of this revolutionary war. "What," he asks, "are the professional classes doing in this matter? I suppose that, as a general rule, professional men have been more adversely affected by the misfortunes of war than anybody, and unless stronger self-assertive efforts are made by them than have been made in the past they will without a doubt find themselves badly sandbagged between officialism and commercialism in the business affairs of the new world. I make no pretence at having either the ability or the time to set forth the ways and means, which ought to be considered without delay, of safeguarding professional interests, but I do offer the suggestion that as a start off each profession should show a united front and each be represented by one recognised institution, instead of by half a dozen. Reconstruction, as distinguished from patching up, must be preceded by a certain amount of destruction, and before our professional bodies can be successfully reconstructed some painful demolition may be necessary."

The town-planning project for Chiswick has to this extent been insured, as Mr. Whitley, the Chairman of the Committee in the House of Commons, announced on Wednesday last that the Brentford Gas Company had at the eleventh hour decided to withdraw the provisions of their contested Bill so far as they relate to the acquisition of land in Chiswick for the building of their proposed enormous extensions of gas works to cover 150 acres (at least) on land facing the River Thames between Chiswick Church and Kew Bridge, now devoted to market gardens, orchards, and agricultural land. A strong local committee has been working for some months in opposition, and a big meeting was held recently, when resolutions were unanimously passed protesting against the use of the land in Chiswick for gasworks. Major Goldman, M.P., who lives at Walpole House, Chiswick Mall, produced an illustrated brochure (at a cost of considerably over £100), showing the site and its surroundings, with maps and also plans of the town-planning scheme, together with a panoramic photograph of the river front sought to be preserved instead of being converted into coal wharfs. Sir Herbert Nield, M.P. for Chiswick, Sir William Bull, M.P. for Hammersmith, and the Right Hon. John Burns have all helped, and the Labour Party sent a deputation to view the site in the interest of the working classes, with the result that it was decided to support the local committee's opposition. The Chiswick Urban Council intends to utilise the land for a big town-planning scheme, including recreation grounds on the parts of the property too low in level for remunerative house building, a new enlargement of the

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parochial cemetery, and the creation of a two-mile pleasure walk along the river. The Duke of Devonshire has, through Lord Hartington, assured the committee of residents that he would rather sell the land to the Council for a garden city project than for the gas company's factories.

"New Insides for Old Houses," is the attractive title of a tale of the transformation of an unattractive and inconvenient town house into one of unique charm, and with gratifying economy, contributed by its owner, Mr. W. J. Bassett-Lowke, of 78, Derngate, Northampton, to the May-June issue of "Berger's Mercury," which is issued by Messrs. Lewis Berger and Son, Ltd., Homerton, E.9. The article is copiously illustrated, and any reader desirous of emulating Mr. Bassett-Lowke's success will do well to get the issue. Prior to the alterations, the street door opened into a narrow passage which was carried up through the house with the flights of stairs one above the other in the stereotyped fashion. One of the most complete changes effected has been to turn all the stairways round at right angles across the centre of the house, so that space has now been left for a cosy lounge hall which is seen in the first illustration given. Thus, instead of turning immediately to the left on entering the front door in order to ascend the staircase, one now crosses diagonally across the hall to do so, and ascends behind an inviting trellis screen to the floor above. This also adds to the spaciousness of the hall, which is even now of quite modest dimensions—some 14 ft. by 9 ft., or, including the stairway, 14 ft. by 12 ft. As will be seen from the plans of three of the floors before and after alterations, the limitation to the extensions were very great. The house being one of a row, with no front garden, it was only possible to put a projection out at the back and a small bay at the front. The whole scheme of furniture and decorations for the hall and guests' bedroom was the work of Mr. C. R. Mackintosh, an artist-architect of Chelsea, who in pre-war days practised in Glasgow.

We understand that the goodwill of the business of Claridge's Patent Asphalte Co., Limited, has been bought by the British Roofing Co., Limited. It is their intention to carry it on under the title of Claridge's Patent Asphalte Co. (1918), Limited; and having acquired all the patents and formulas, as well as the wharf and machinery owned by the late company, they are in a position to carry out contracts in the same first-class style that gained the original company a name second to none for excellence and quality. All inquiries should be addressed to 11, John Street, Crutched Friars, E.C.3.

Mr. Gwilym C. James, J.P., of Llanwysg, Crickhowell, a member of the Breconshire County Council and an ex-High Sheriff of Monmouthshire, has presented to the town of Crickhowell, as a memorial to his son, Lieutenant C. B. James, who fell in action in Flanders, the historic Crickhowell Castle, now in ruins. The castle was the home of the Norman Baron De Pauncefote, an ancestor of Sir Julian Pauncefote, formerly British Ambassador in Washington, and was destroyed by Cromwell.

SAFETY IN SCAFFOLDING CONSTRUCTION.

There is probably not much to teach the reputable firms who undertake the erection of works of the first class here at home; nor, for the matter of that, of the genuine builder of the old school who still prides himself, with good reason, on the solidity of his construction, and equally so, while that is proceeding, on all possible precaution against accidents to those engaged thereon, and against delays following therefrom, or due to risky and ill-suited appliances. Of all the latter the scaffolding is still the most important, and its scientific erection is as full of interest, in its way, and of only less importance than the building its completion serves to encompass. For all that we *do* still find ourselves at times on scaffolds where disregard of due precaution inspires feelings of thankfulness when once again we find ourselves on terra-firma, and some little wonder that those principally concerned are content to encounter needless risk in the absence of insistence on proper construction.

In America, in this, as in other matters, more attention is given to such by the authorities concerned, and it may be useful to reproduce the following rules and regulations which have recently been promulgated by the Department of Labour and Industry of the Pennsylvania Industrial Board to guard against accidents, and referring in particular to scaffolds erected for the building of brick walls. They are as follow:—

No person shall be permitted to labour in any group employment, in a position of command or obedience, who is unable to speak or understand the language of his or her co-labourers, whereby through misunderstanding, accident and injury are apt to result to fellow-workers.

THE SCAFFOLD POLES.

For ordinary pole-scaffold work on buildings not more than five stories in height, the poles or uprights should be 3 x 6 ins. in cross-section and shall not be less than 3 x 4 ins. For extra heavy work, or for buildings more than five stories in height, the size of the poles shall be correspondingly increased at the bottom, and gradually taper off to a minimum of 3 x 4 ins. at the top. The poles or uprights shall be as near to the wall as practicable. For ordinary work they should be set so that there is a clear space of 5 ft. between them and the wall.

In standard construction the poles shall be spaced parallel to the wall, at a distance of not more than 7 ft. 6 ins. from centre to centre (16-ft. platform planks being then used). Where the scaffold turns a corner the poles shall be set closer together. The uprights of a pole scaffold should never be allowed to rest directly upon the surface of the ground. They shall be securely fixed at their lower ends, to prevent displacement. Where the ground is hard and stony, a hole 8 or 10 ins. deep should be dug, and the end of pole should be brought firmly against the undisturbed earth at the bottom. The removed soil should then be filled in around the foot of the pole and be solidly rammed.

Where the ground is soft, a sound block, about a foot square and not less than 2 ins. thick, should be placed at the bottom of the hole to distribute the load. The pole shall be solidly fastened to the centre of the block, either by nailing or by some other effective means. Where a pole bears directly on a sidewalk or other thoroughfare the foot shall be rigidly fixed so as to prevent its sliding or otherwise becoming displaced. To increase the height of an upright, except where a bolted scarf is used, the upper pole shall be set squarely upon the end of the lower one, and should be fastened to it by means of cleats securely nailed to both poles. These cleats should not be less than 1 in. thick by 4 ft. long, and not less than the width of the pole. They should be so placed as to overlap each pole by not less than 2 ft. Not less than two cleats shall be used to every joint or splice. Two or more consecutive or contiguous uprights should not be spliced at the same general level.

THE LEDGERS.

Ledgers shall be not less than 1 in. thick (or $\frac{7}{8}$ in. thick if surfaced on one side). For heavy work, ledgers should be 12 in. wide. Where the load on the platform is sure to be light, ledgers may be only 10 in. wide; but ledgers less than 10 in. shall not be used.

When poles are set at the standard interval of 7 ft. 6 in. between centres the ledgers should be at least 16 ft. long and overlap the poles by a few inches at each end. Ledgers which have become split at the ends shall not be used.

The vertical spacing of the ledgers is best determined by the requirements of the work being carried on. For bricklaying purposes the height from the upper edge of one ledger to the upper edge of the one next above should be approximately 5 ft. Care should be taken to see that the ledgers are level, and that their top edges are at the same height as the bottom of the openings in the wall opposite them for receiving the ends of the putlogs; and wherever possible all ledgers shall be nailed or otherwise fastened to the inside of the poles or uprights. Unless clamps or through-bolts are used, nothing less than tenpenny 3-in. nails shall be used for nailing ledgers. Where practicable, not less than five such nails shall be used. Where two ledgers lap over each other on the same pole, each ledger shall be subject to these minimum requirements

For heavy platform loading the ledgers should be reinforced with cleats nailed to the poles at the bottom of the ledgers, and for ordinary loads, putlogs shall be not less than 3 by 4 in.

Putlogs should be long enough to project over the ledgers by not less than 6 in., and in new work the ends of the putlogs should be built into the wall, and shall not be notched or cut down

THE PLATFORM PLANK AND PUTLOGS.

The alterations and repair work, where the putlog is notched or cut down at the end, so as to enter the hole left in the wall by the removal of a brick, the notch shall always be on the upper side of the putlog. The notch should be just deep enough to permit the end of the putlog to enter the hole in the wall, and shall not be more than 5 in. in length. The putlogs shall not have less than 4 in. bearing on the wall, and where a putlog comes at a window opening it shall be rigidly secured to prevent displacement.

Putlogs shall be spaced not more than 4 ft. apart, and care shall be taken to place the putlogs so that they rest upon the ledgers as close as possible to the poles.

Platform planks shall not be less than 1 in. thick, and should not be less than 10 in. wide. They shall be laid with their edges close together, so that the platform will be "tight."

Two successive lengths of planking shall not be permitted to abut upon a single putlog. If planks are laid end to end, two parallel putlogs shall be provided not more than 8 in. apart, and in such manner that one putlog supports the end of one of the planks and the other putlog

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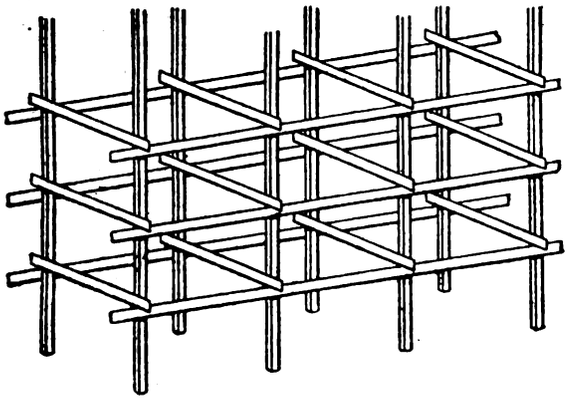
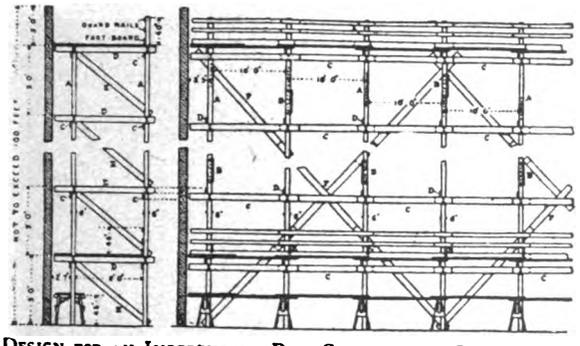
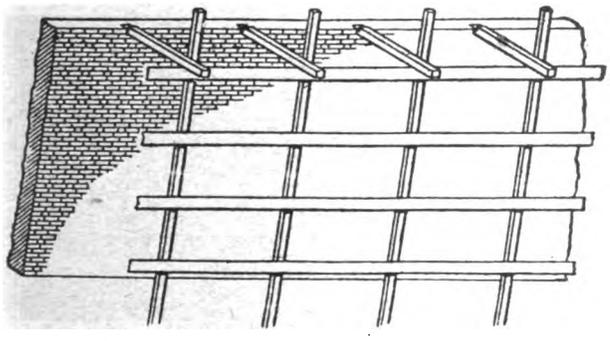


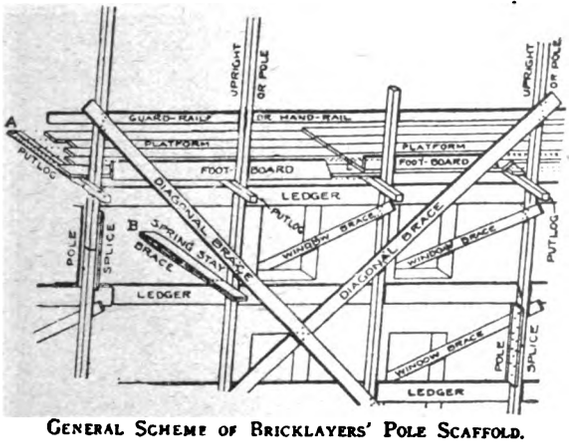
SKELETON OF AN INDEPENDENT POLE SCAFFOLD.



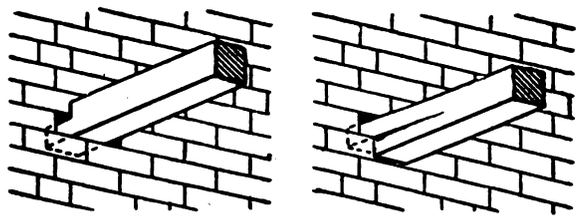
DESIGN FOR AN INDEPENDENT POLE SCAFFOLD FOR CONSTRUCTION WORK.



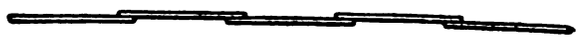
SKELETON OF A BRICKLAYERS' POLE SCAFFOLD.



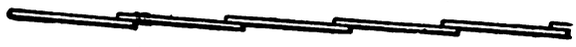
GENERAL SCHEME OF BRICKLAYERS' POLE SCAFFOLD.



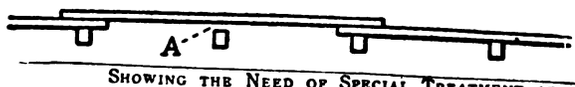
CORRECT POSITION OF PUTLOG. INCORRECT POSITION OF PUTLOG.



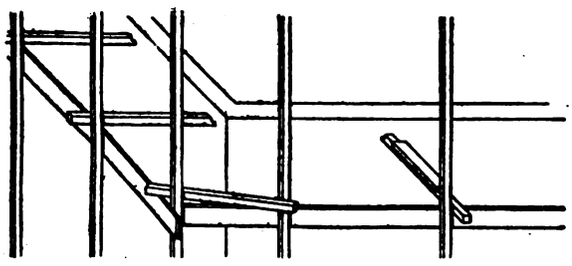
USUAL ARRANGEMENT OF THE PLATFORM PLANKS.



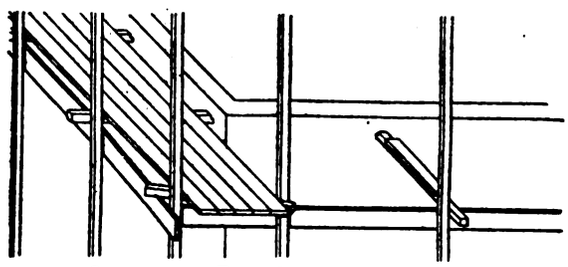
ANOTHER METHOD OF LAYING THE PLANKS.



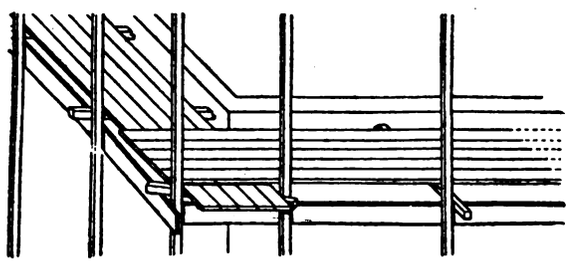
SHOWING THE NEED OF SPECIAL TREATMENT AT CERTAIN POINTS.



SHOWING THE CORNER PUTLOG IN POSITION.



SHOWING THE FIRST COURSE OF PLANKS IN POSITION.



SHOWING BOTH COURSES OF PLANKING IN POSITION.

supports the abutting end of the other plank. Where platform planks overlap on a single putlog the lap of both upper and lower planks shall not be less than 6 in. over the centre of the putlog.

Platform planks shall project over putlogs at end of scaffolds by not less than 6 in., and by not more than 12 in., unless a rail is provided, to prevent a man from walking out on the unsupported end of the plank.

BEARING SURFACE AND BRACING.

Where the scaffold turns a corner one or two putlogs should be laid diagonally across the corner, so that each may have one of its ends resting upon each of the two ledgers that meet at the corner, and great care shall be taken in laying the platform planks where the scaffold turns a corner, in order to eliminate all danger from tipping.

All pole scaffolds shall be thoroughly and adequately braced and shored in such a manner as to prevent same from swinging away from the building, and from collapsing by moving parallel to the wall of the building.

Mr. E. E. Finch, the engineer of the City of London, has, with the consent of the committee under which he works, joined his Majesty's Forces.

The friends and colleagues of Mr. E. C. P. Monson, F.R.I.B.A., P.P.S.A., will sympathise with him in the loss he has sustained in the death of his son, Lieutenant E. C. S. Monson, R.F.A., who was recently killed in action after a few weeks' service in France, during which time he greatly distinguished himself and was awarded the M.C.

Mr. Henry Charles Stephens, whose death is announced, was born in the year 1841, and married Margaret Agnes, daughter of the late Dr. Mackreth, by whom he leaves two sons and a daughter. Mr. Stephens, who represented the Hornsey Division as a Unionist from 1887 to 1900, had ceased for some years to take an active interest in the business of H. C. Stephens, ink manufacturers, of which he was the senior partner, and was well known as an agriculturist and successful breeder of pedigree stock.

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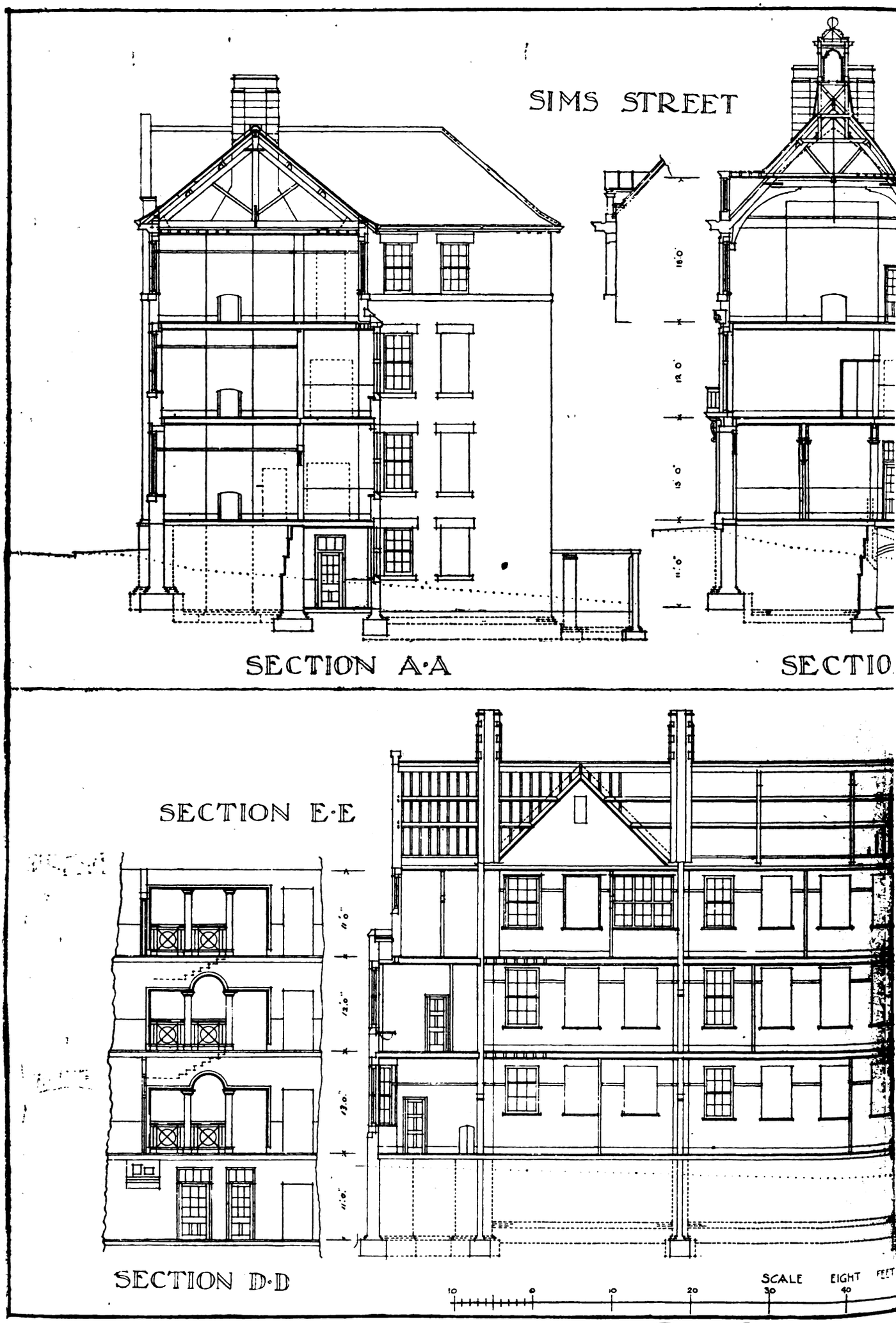

SCHOOL MEDICAL DEPARTMENT BUILDING, SIMS STREET, SHEFFIELD,

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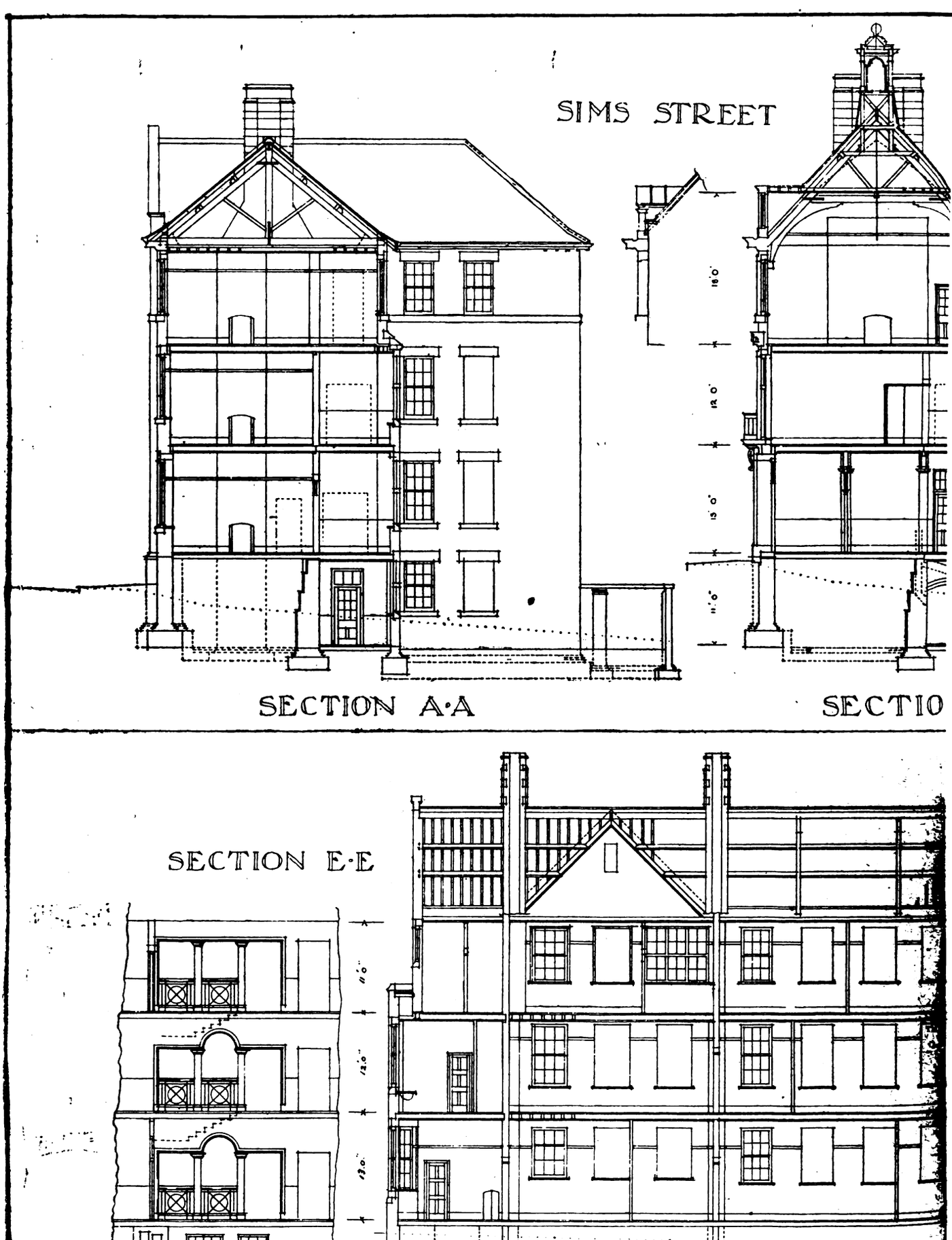

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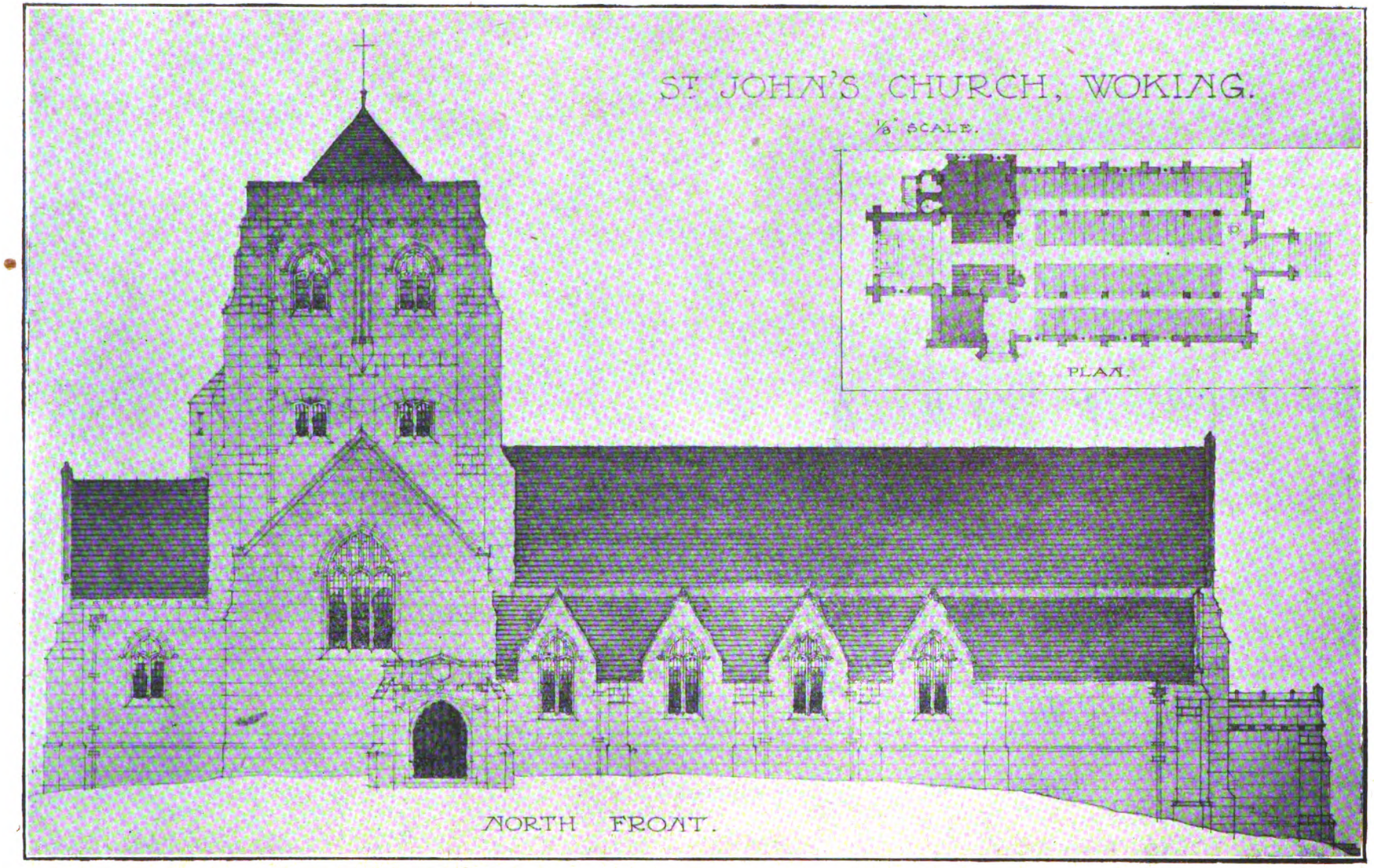

ST. JOHN'S CHURCH, WOKING, SURREY: THE NORTH ELEVATION.
Mr. BRIANT A. POULTER, F.R.I.B.A., Architect.

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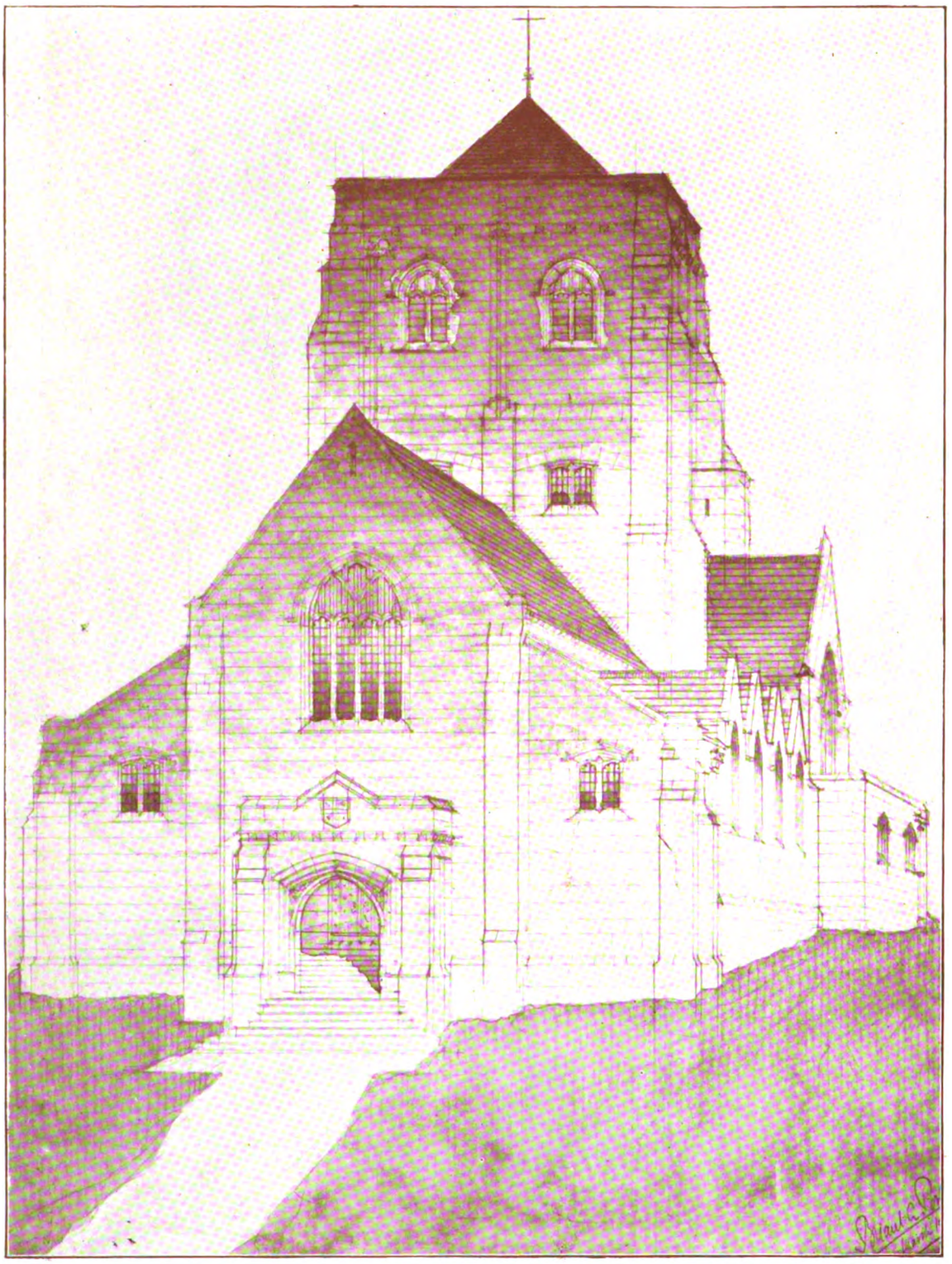

ST. JOHN'S CHURCH, WOKING: WEST FRONT.
Mr. BRIANT A. POULTER, F.R.I.B.A., Architect.

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NEW BUILDINGS, LONDON SCHOOL OF MEDICINE FOR WOMEN: PRINCIPAL ENTRANCE IN DETAIL.

Messrs. H. V. Ashley and Winton Newman, FF.R.I.B.A., Architects

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NEW BUILDINGS, LONDON SCHOOL OF MEDICINE FOR WOMEN.
Messrs. H. V. Ashley and Winton Newman, FF.R.I.B.A., Architects.

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THE EDUCATION COMMITTEE.—Mr. F. E. P. EDWARDS, F.R.I.B.A., City Architect.

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Our Illustrations.

NEW BUILDINGS: LONDON SCHOOL OF MEDICINE FOR WOMEN, HUNTER STREET, W.C.

These photographs from this year's Royal Academy Exhibition illustrate part of the work carried out from the designs of Messrs. H. V. Ashley and Winton Newman, FF.R.I.B.A., of 14, Gray's Inn Square, W.C. The larger view is a detail of the main entrance, which occurs in the façade illustrated by the top picture on the second sheet. The school is in Hunter Street, W.C., in connection with the Royal Free Hospital. The extensions were necessary because of the large number of women students entering the medical profession, and the accommodation largely comprises teaching laboratories with extra lecture rooms. We gave some sheets of geometrical drawings and plans in our issue of November 1 and 8, 1916, when the work was in hand, and these details included the Wakefield Street front. The builders were Messrs. Holliday and Greenwood. The architect of the original premises was the late J. M. Brydon, F.R.I.B.A. The present additions provide for departments of anatomy, physiology, chemistry, physics, and pathology. A complete clinical house is provided on the top floor.

ST. JOHN'S CHURCH, WOKING.

These drawings are in the Royal Academy this year, and show the parish church of St. John at Woking as enlarged. Mr. Briant A. Poulter, F.R.I.B.A., is the architect. The building stands on a hill, and the available space for the additions in the restricted churchyard was very limited. The chancel had to be pulled down and extended. The plan with the north elevation shows these extensions. Bargate stone is used for the walling, with Bath stone for the dressings. Thick green slates cover the roofs. The oak timbers are left natural colour as wrought and left from the tool. The choir and clergy stalls are of oak, and marble flagging squares pave the chancel. The tower has a ringing chamber and space for bells. We gave a drawing of the east end in our issue of October 17, 1913.

SCHOOL MEDICAL DEPARTMENT BUILDING, SIMS STREET, SHEFFIELD, FOR THE EDUCATION COMMITTEE.

The three plans and four elevations of this important Medical School Department at Sheffield were published in THE BUILDING NEWS on July 10 last. To-day we print a double-page sheet of four sections from the architect's working drawings. Some particulars of the projected work stopped by the war were given with our previous illustrations. Mr. F. E. P. Edwards, F.R.I.B.A., is the architect.

THE SURVEYORS' INSTITUTION.

THE HONORARY SECRETARY.

Mr. Arthur Norman Garrard, Fellow, of the firm of Messrs. Daniel Smith, Oakley and Garrard, 4 and 5, Charles Street, St. James's Square, S.W.1, has been elected Honorary Secretary of the Institution in the place of the late Mr. Percivall Currey. Mr. Garrard was Professional Associate of Council from 1899 to 1904.

THE TAXATION OF WOODLANDS, SCHEDULE B.

In May last the Council of the Institution approached the Chancellor of the Exchequer with the object of urging an amendment of the Finance Bill, 1918, for the purpose of relieving woodlands, etc., from assessment to income-tax Schedule B at double annual value (*vide* page 513, *Estates Gazette*, June 1, 1918).

Their representations proved successful, a proviso being added to Clause 21 of the Bill enabling exemption from the double tax to be obtained on certain conditions in respect of land not occupied for purposes of husbandry.

The following circular to members of the Institution has since been drawn up, and it is desired to draw their attention to the important further concession contained in Mr. G. R. Hamilton's letter of June 29. It will be noted that when lands are already scheduled as woodlands, shrubberies, policies, the assessment will normally be made on that basis, and owners, agents, and others will, therefore, as a rule be relieved from the necessity of making application for these lands to be assessed at the lower rate:—

"12, Great George Street,
"Westminster, S.W.

"TAXATION OF WOODLANDS, GARDENS, POLICIES, ETC.

"The attention of members is drawn to Section 21 of the Finance Act, 1918, under which, as originally drawn, it was proposed to increase the assessment for income-tax, Schedule B (i.e., on the profits of occupation), on all lands to an amount equal to twice their annual value. It was, however, pointed out to the Chancellor of the Exchequer that such an additional burden would fall with special severity on woodlands and other land, such as gardens, shrubberies, etc., bringing in but small return.

"As a result of these representations a proviso was added, during the passage of the Bill through Parliament, to the effect that where it is proved to the satisfaction of the Income-Tax Commissioners that any person assessed in respect of the occupation of land is not occupying such land for, or mainly for, purposes of husbandry, he shall continue to be assessed for Schedule B on the annual value only, unless the Board of Agriculture certify that the use of the land for purposes other than husbandry is unreasonable.

"There seemed reason to fear that this proviso might necessitate owners having to make special claims to the Commissioners in respect of all woodlands and other lands coming within the terms of the proviso, thereby throwing a large amount of unnecessary labour upon both agents and the Inland Revenue staff. The Chairman of the Inland Revenue Commissioners was therefore approached with the object of securing that land already scheduled as woodland, etc., and known, therefore, not to be used for purposes of husbandry, should continue to be assessed at the old rate, unless there were some reason to suppose that the Board of Agriculture certificate, if asked for, would be refused. In reply to this proposal the following letter has been received:—

"Board Room, Inland Revenue,
Somerset House,
"June 29, 1918.

"Dear Sir,—In reply to your letter of the 24th instant, I am directed by the Chairman of the Board to say that, in regard to lands which are in fact used for purposes other than husbandry, sufficient information would in most cases be available to render it unnecessary for the taxpayer to make any application to the Income-Tax Commissioners with a view to assessment to income-tax, Schedule B, on the single annual value. The assessment, in such circumstances, would normally be made on that basis without any application.

"Notice of assessment will be issued in all cases, so that, if in any instance a difference of opinion should arise, the taxpayer will have an opportunity, whether or no he has made any prior application, to raise the matter by way of appeal.—Yours faithfully,
"G. R. HAMILTON.

"A. Goddard, Esq."

The Building Material Supply Committee—Messrs. Geo. Corderoy, J. W. Hurrell, and Wm. Woodward—have recently given evidence before the above Committee on behalf of the Institution.

The Acquisition of Land Committee of the Ministry of Reconstruction—Mr. J. H. Oakley, President, with Messrs. Thos. Binnie, A. L. Ryde, Edwin Savill, and J. W. Wallis—have given evidence before the above Committee on behalf of the Institution.

The Archbishop of York has unveiled at Sledmere, near Driffield, a memorial to fallen soldiers of the local battalion of the Yorkshire Regiment. Heroic figures of villagers in brass, and of Lieut.-Colonel Mortimer, late Commanding Officer, are sunk into the panels of a Queen Eleanor cross, which the later Sir Tatton Sykes erected at the entrance to Sledmere Park. The cross stands on a base of masonry, and a legend is attached to each soldier notifying that he gave his life for his King, his country, and the liberty of mankind.

TIMBER AND TIMBER INDUSTRY.

On page 377 of our issue of May 22 last we gave a brief abstract, including the salient points of the very excellent paper on "Timber Industry" read before the Royal Society of Arts on May 15, by Mr. Percy Groom, M.A., D.Sc., F.L.S., Professor of Technology of Woods and Fibres at the Imperial College of Science and Technology. The paper has recently been published *in extenso* in the *Journal of the Royal Society of Arts*, and we reproduce it in full, convinced that its additional publicity in our columns will be appreciated by all who are aware of the very high position occupied by its author among those really conversant with the subject he so lucidly dealt with.

TIMBER INDUSTRY.

By PERCY GROOM, M.A., D.Sc., F.L.S.
(Professor of Technology of Woods and Fibres, Imperial College of Science and Technology.)

This paper will mainly deal with the extent to which technical science can aid, or has aided, in promoting the timber industry in this country and the utilisation of the timber resources of the British Empire. Although it is obvious that practical details in trade will constitute limiting factors of the extent to which organised application of technical knowledge can be of immediate commercial and Imperial service, little consideration will be given to obvious practical questions such as the impending revision of the relations between employer and employee; the wisdom of improved organisation of the timber trade along lines that are in the interests of the trade, the nation, and the Empire; and the effect of tariff reform.

The special qualities of timber that render it all important in daily life may perhaps be best understood if we consider the demands made on wood in the living tree, which is exposed to various vicissitudes during its prolonged existence. The wood at the base of a tree-trunk has to withstand tons of pressure per square inch, while the trunk has to resist the bending action associated with its columnar form and the shearing tendency of its boughs. The trunk and branches have to resist shock caused by gusts of winds acting on a large head of foliage. Yet the young wood of the twigs or outer parts of the trunk must possess a certain degree of extensibility and toughness, as opposed to brittleness, so that they can endure change of shape under shock. Since one essential function of the wood is to conduct rapidly water to the leaves, wood must necessarily contain certain water-channels, and therefore be an excavated not a solid material. And since the water conveyed contains substances in solution, wood is capable of impregnation by watery solutions of dyes and preservatives. Remembering the great heights attained by certain tree-trunks, and the immense load of branches, it is necessary that wood in the tree be relatively light in weight when compared with its strength and stiffness. Finally, it is evident that wood in the tree must possess a certain degree of durability.

These various qualities essential to wood, in order to make possible the existence of a tree, render timber a material having unique properties as regards strength, elasticity, extensibility, and above all confer upon it a general superiority to metals as regards comparative weight and strength. The feeble powers possessed by wood of conducting heat, the relative ease with which it is worked, and the great variety of timbers available enhance its value, and add range to the variety of uses to which it can be put as a structural material. Moreover, in certain situations, or when appropriately treated, wood is far more durable than iron; and can be subjected to processes by which it successfully withstands temperatures at which iron flows away as a molten liquid. Consequently as a *structural* material wood subserves purposes too familiar and numerous for enumeration.

When disintegrated it yields *fibres* that provide paper and cordage; while as a *chemical* complex wood is a fuel, and is the source of substances as diverse as charcoal, alcohols, acetone, formalin, artificial silk, turpentine, dyes, scents, and rugs.

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New uses for wood are constantly being discovered and old uses being increased, so that with the advance of civilisation the consumption of timber per head of population steadily rises, despite its replacement for certain purposes by other materials such as iron and ferro-concrete. Hence in this country and the British Empire generally we know that there will be an ever-widening demand for timber. The amount of wood used by this country may be estimated by a consideration of the imports of 1913.

In 1913 the values of the imports of timber into the United Kingdom were :—

Softwood (conifer) logs, sawn, planed, etc.	£22,800,000
Softwood (conifer) pit-timber...	4,400,000
Softwood (conifer) wood-pulp...	5,425,000
Total	£32,625,000
Hardwood, oak-logs	£1,700,000
Hardwood, wood manufactures	4,600,000
Hardwood, teak, mahogany, furniture, etc.	3,800,000
	10,100,000
Softwoods and hardwoods. Total	£42,725,000

In addition, there was consumed a large amount of wood grown in the United Kingdom.

The largest item is represented by *softwoods*, which grow in the north-temperate regions, and are actually exported thence to tropical and southern countries. In the British Empire there is therefore only one great source of supply, namely, Canada. The supplies of softwoods are steadily decreasing in amount and receding in accessibility. The depletion of supply is particularly marked and serious in reference to constructional softwood of large dimensions and good quality. At present Douglas Fir (British Columbian pine), some pitch-pine in the United States, and some Scots pine in the recesses of Russia, represent such large timber. When these stocks have vanished they will probably never be replaced, because in modern forestry operations conifers in artificial forests are felled at the age of seventy to eighty years, as they then yield the optimum return.

It is therefore evident that the price of softwoods will continue to rise, and the more so with the increasing demands made by the growing southern nations in Australia, South Africa, and elsewhere.

What steps are to be taken to alleviate the threatened situation? In answer, four possibilities suggest themselves :—

1. Increased production of softwoods in this country, and the British Empire generally, by *afforestation*.
2. Partial substitution of hardwoods grown in British Colonies and Dominions for softwoods imported from foreign countries.
3. Maximum avoidance of loss and waste.
4. Further economy in the usage of timber.

Dealing first with the last possibility, the question arises : Is this country extravagant in its consumption of wood? The answer must be in the negative, since the subjoined table proves that the annual consumption per head of population is less than that of any other Great Power, with the solitary and small exception of Italy.

APPROXIMATE ANNUAL CONSUMPTION OF WOOD IN CUBIC FEET PER HEAD OF POPULATION.

United States	260
Canada	192
Russia	63
Austria-Hungary	57
Germany	36·6
France	24·6
United Kingdom	14
Italy	13

Although the consumption of wood in this country is not extravagant, I shall show later in this paper that not inconsiderable economy is possible.

The question of *afforestation* in the United Kingdom has been repeatedly considered by Government. The scheme appealed rather to statesmen than to politicians, and as a commercial proposition promised only a modest return at a distant date. Recent experience has, however, introduced, a broader outlook, which recognises the direct and indirect effects of forestry upon agriculture, rural re-population, and the defence of the country, so that sanction has been given to a scheme in Great Britain. Years ago I endeavoured to interest the War Office in a scheme of combining an increase in the Army with the initiation of afforestation that should be carried out by a staff mainly recruited from men who had served in the Regular Army or were auxiliaries in the Army. It is to be hoped that some such plan, taking cognisance of the existence of the Royal Air Force, will be considered for adoption throughout the British Empire.

The success of any measures, including afforestation, designed to improve conditions in this country as regards the timber industry, will depend finally upon the extent to which the pertinent scientific and technical knowledge is acquired and applied. The remainder of this paper will therefore be devoted to a survey of the fundamental facts and principles that have been learnt through research, and to some mention of problems calling for solution.

The chief, but not exclusive, problem of afforestation in this country is the successful production of coniferous timbers or softwoods. Great Britain, with its temperate island climate, is well suited for the growth of conifers, and taking into consideration its ranges of temperature, altitude, and soil, I am of opinion that the British Isles are better suited than any other country in Europe for the cultivation of a wide range of conifers. The main question, however, is not the successful growth of the tree but the successful production of timber of proper quality; the former does not necessarily involve the latter. Yet we do know that good coniferous timber can be grown in this country. Years ago, by means of mechanical tests at the Imperial College, it was discovered that timber of Scots pine grown even in the South of England is suitable for paving the streets; while last year mechanical tests proved that not only in the South of England, but also in the Highlands of Scotland, the Scots pine can yield slow-grown timber that is equal to the highest demands ever made on wood, namely, use in vital parts of aeroplanes.

Now not only do the timbers of different kinds of trees differ in their qualities, but the timber of one and the same species of tree varies according to the conditions under which it is grown. Therefore, if timber of the best quality is to be produced, it is necessary to be able quantitatively to estimate the mechanical values of different samples, and to analyse the conditions under which these have grown, so that in forestry operations the correct treatment may be adopted in connection with each species of tree. Some of the valuable results obtained in this connection by the researches of botanists, foresters, and mechanical engineers may now be considered.

Timber is not strictly a material, but is an elaborately designed structure, consisting of solid wood-substance excavated so as to form a framework. The elementary structural units of wood are hollow : their solid walls and sometimes their cavities contain water; the portions of their cavities unoccupied by water are mainly filled with air. When a piece of wood is completely dried its weight may be regarded as wholly due to the solid framework of wood-substance (though this is not absolutely correct). Inasmuch as the specific gravity of the wood-substance of all kinds of timbers investigated is approximately the same (viz., about 1.55 or 1.56), it follows that the so-called specific gravity, or the weight per cubic foot, of absolutely dry timber is a sufficiently correct indication of the amount of wood-substance in it. A "heavy" timber has much wood-substance, a light timber has only little wood-substance. Hence it follows that the strength, stiffness, hardness, and heating power of timbers tend to be proportional to their respective gravities, so long as they contain the same percentages of water. This tendency is at a maximum when different samples of one and the same kind of timber are in question.

(To be continued.)

PROFESSIONAL AND TRADE SOCIETIES.

THE A.A. BROWN BOOK, 1918.—The Architectural Association Brown Book, which is naturally limited in size and scope, covers only the seventieth session of the Association, which ended on May 31, 1917, when its membership was 1,345. Since then seven new members have been enrolled, and the losses by death and other causes have been 48. Some brief notes of the transfer of the premises to 34 and 35, Bedford Square, are given, a full statement of accounts, the Roll of Honour, including members who have fallen in the war since it began in 1914, the Constitution and By-laws, and a list of the Association's present activities.

THE BEAUX ARTS ATELIER.—Owing to the premises at 16, Wells Mews having changed hands, it became necessary for the Committee to find some temporary home for the Atelier, pending a removal to a permanent one after the war. The Council of the Society of Architects, through whose exertions the Beaux Arts Committee was first formed and the Atelier established and carried on until it became self-supporting, and which has housed the Committee from its inception, has placed at its disposal a room in the western annexe of the Society's premises, at 28, Bedford Square, for use as an Atelier. This room has a separate entrance from Bayley Street, and is shut off from the rest of the Society's premises, and has been adapted to meet the needs of the Atelier. The Beaux Arts Committee have availed themselves of the Society's hospitality, and the Atelier is now established at the new address. The patron, Mr. Arthur Davies, F.R.I.B.A., who has recently been gazetted out of the Army owing to ill-health, is again taking a personal interest in the work, together with Mr. A. R. Jemmett, F.R.I.B.A., and other enthusiastic founders and supporters, and it is hoped that the services of the sous patron, Monsieur Chaures, now serving with the French Army, will presently be once more at the disposal of the members of the Atelier. All the eligible members of the Atelier are serving with H.M. Forces, and those who are left are engaged on work of national importance at the Atelier, as well as carrying on the ordinary work of the Atelier under modified conditions. One feature of the work, the Life Class, continues to be held as usual on Thursday evenings. During the war a subscription of £1 1s. per annum entitles members to use the Atelier, and take part in whatever programme is arranged from time to time by the patron.

THE SOCIETY OF ARCHITECTS.—The following applicants have been found by the Council to be eligible for candidature, and their nominations are announced for the information of the members. Communications in respect of the candidates must reach the Secretary, for the information of the Council, before September 1, 1918, after which date their names will be on the list for election by ballot of the members at the next ensuing meeting :—Castle, Sydney Ernest, Amberley House, Norfolk Street, Strand, W.C.2. (proposed by Percy B. Tubbs, F.R.I.B.A., and W. Ernest Munro); Jackson Reginald Neville, 8, Holts Buildings, Durban (proposed by the South African Branch); Verrall, Ernest Barnard, Sefton House, Louis Street, Leeds (proposed by F. W. Rhodes and Fred Broadbent); Warren, Gerald, Amberley House, Norfolk Street, Strand, W.C.2. (proposed by Percy B. Tubbs, F.R.I.B.A., and W. Ernest Munro).

Mr. Theodore R. Saunders, F.S.I., of Ventnor, who has retired from professional work, has been identified with the development of the town for a period of forty-five years, and has been responsible for the architecture of many of the public buildings and larger residential properties, besides being the engineer of several important waterworks and pier undertakings. For many years Major Saunders was connected with the Volunteer movement in Ventnor, and for a long time he was commanding officer of F and G Companies, under the old régime. Mr. Percy DuFeu, who has been Mr. Saunders' right-hand man for a long period, will carry on the practice.

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Our Office Table.

The principal subject discussed last week at the annual meeting of the Museums Association, held at the Town Hall, Manchester, was the function of the art museum. Mr. Lawrence Haward, of the Manchester City Art Gallery, in a paper on "Art's Opportunity," said that art galleries and museums must seize the opportunity of taking their share of reconstruction, must justify their existence, and take their rightful place in the community by maintaining a hopeful ideal. The main functions of the art gallery and museum were to quicken the mental and spiritual life of the people, and to provide standards of reference both in the industrial and fine arts by showing the public the best that was available. With the best that had been produced in the past and that was being produced to-day, the public would have the right basis on which to build in the future. Too often, he feared, they had been content to think mainly of the past, and the tendency had been to put something into the museum when it was really dead, and not before. The museum in some places, instead of being a source of life and inspiration, was little more than a necropolis. If they were to set an example, only the best must be shown; which meant that they must resist the temptation to exhibit in the pride of possession some of the prizes of a previous day, and must be strict in scrutiny of gifts and bequests, no less than of purchases, for fear of lowering the standard which it was their first duty to maintain.

The Indian Government, in view of the general policy adopted at the Delhi Conference, has decided on the curtailing of building operations. At the new capital work on the central buildings will be stopped at the point where they can be left without fear of deterioration. Regarding other work, it has been decided to construct only buildings which can be utilised for the accommodation of extra Army Headquarters' establishments necessitated by the war, and of the additional troops recruited in connection with the increase of the Army resolved upon at the Conference. Owing to the exorbitant prices demanded for steel plates and other steel and iron articles, tinplates, and copper tubing, the Government announce the control of these articles under the Defence Act, in order to provide for immediate war requirements and to maintain supplies for essential industries. At Calcutta, according to the *Times* Correspondent, the lowest price asked for steel wire rope is three or four times the cost of material imported on priority certificates.

Our congratulations to the Thames Oarsmen and others, who, as we announced on p. 32 last week, met last Wednesday to organise opposition to the second reading of the Brentford Gas Company's Bill. The same evening, in the House of Commons, Mr. Whitley, Chairman of Ways and Means, in reply to Major Goldman (Penrhyn and Falmouth, U.), said he was informed by the promoters of the Brentford Gas Bill that the provisions of the Bill relating to the acquisition of land at Chiswick for the purposes of gasworks described in Part I. of the schedule would be withdrawn. In regard to the remainder of the Bill the promoters desired to postpone its consideration until the House had proceeded further with the Government Bill dealing with statutory prices. He was unable to say, therefore, at present, when the other parts of the Bill would be proceeded with. The reply was greeted with loud cheers.

An article under the heading "Damage to Concrete by Gas-Water," appeared in the *Chemiker Zeitung*, No. 22, of 1917, and the *Deutsche Bauzeitung*, March 9, 1918, points out that the heading would lead anyone to suppose that gas-water had a deleterious effect on concrete, whereas experience proves the opposite to be the case. A large number of concrete gas-holders have been built since 1880, and are still in use in perfectly sound condition. In recent times many others have been constructed either of concrete or reinforced concrete, and of course proper precautions must be taken against settlement, the effects of water-pressure, and expansion due to changes of temperature. Very satisfactory results have also been obtained in the use of concrete tanks for ammonia-water. It is probable that the addition of trass to cements having a good deal of free lime is desirable in circumstances where the reservoirs are to contain acids. Summing up the question, the Concrete Society considers it most desirable that gas-holders, etc., should be built of concrete to save the use of steel under the present conditions of shortage of that material.

In a paper read before the Berlin Architectural Association on April 8, 1918, by Mr. Matzdorff, a Public Works official, the author points out that for a long time after the conclusion of peace the utmost efficiency and economical production of buildings will be necessary. He considers that durability, safety, and even beauty, need not be sacrificed, and recommends standardisation, the diminution in number of new patterns of goods of all kinds, and concentration upon a smaller number, the use of a plaster finish outside instead of expensive stonework and the use inside of some of the newer types of light partition slabs.

In the "Jahrbuch für Bodenreform" (Land Reform Annual) for 1917 is published an article by the late architect Reinhard, who has made a careful investigation of the capital cost of one-family small houses in 52 settlements of different types, and compares these with the cost of building blocks of tenements, and arrives at the conclusion that the separate houses can be built as cheaply as the large blocks. Several well-known architects support his conclusions, and have given actual examples to prove them; there are, of course, cases which may be cited which seem to prove the contrary. The annual also deals specially with the best method of housing the discharged soldier and his family.

An article in the *Deutsche Bauzeitung*, which is well illustrated, describes the method employed in building a factory for the production of cork-stone blocks for Messrs. Grünzweig and Hartmann at Ludwigshafen on the Rhine, in which the special product of the firm was used. The tower of the building was 141 ft. high, and it also comprised a plant for cutting the cork into minute pieces, storage bunkers, and a water storage reservoir. The building comprises a basement, four floors above it, with the bunkers 44 ft. deep above these, and in the tower a circular reservoir 23 ft. diameter by 14.75 ft. deep. The contractors were Wayss and Freytag, of Frankfort-a.-M. The structure appears to be built entirely in reinforced concrete, but the special feature is that the cork-stone blocks are laid direct upon the beams of the floor structure, and below the concrete floor platform, to render the building less resonant, and this method appears to have proved successful.

As the result of an extensive investigation of floor surfaces to meet heavy traffic conditions, the U.S. Navy Department decided to adopt compressed asphalt blocks for Brooklyn Navy Yard general storehouse. Results of the investigation are given in Bulletin No. 29, Public Works of the Navy. The floors laid at Brooklyn Yard cover 8,000 sq. yds. of surface. The blocks are laid continuously through the building and across the shipping platform, no breaks being made at doorways, although the platform is slightly graded away from the building for drainage. The floor is composed of a 6-in. slab of unreinforced concrete laid directly on the tamped and puddled fill. On this a bed of 1 : 3 mortar ½-in. thick is laid and struck off with a screed. The wearing surface of compressed asphalt blocks 5 by 12 ins. by 2 ins. thick is laid directly on the mortar bed without jointing material of any kind, and levelled by light rollers, after which sand is spread over the blocks. This is removed before the floor is put into use. Under traffic the blocks tend to weld or join so as to present a close, smooth surface capable of carrying almost any traffic. The floor is proof against fire, water, acid, and oil; is dense yet elastic; easy to repair; and cheaper than brick or wood block.

At the Senior Street School, Paddington, yesterday, decorations from special designs by Mr. Frank Brangwyn, A.R.A., were presented to the London County Council. The decorations have been carried out under the Arts-in-War Time Committee, whose object is to offer commissions to artists whose profession is one of those most seriously affected in war-time. Mr. Brangwyn's cartoons represent the great part industry has taken during the war. The two larger panels show an arsenal and a dockyard under the stress of war conditions, bold and strong scenes, full of life, and the six smaller panels depict boiler-making, forging, girder-making, rail-laying and so on. The Lord Mayor, who is President of the Professional Classes War Relief Council, presided at the ceremony, and the decorations were accepted on behalf of the London County Council by Mr. H. Norman, the Chairman.

The cause of corrosion of galvanised-iron extensions to chimneys is laid generally to condensation which forms inside the stack, and which in conjunction with the carbon which has been deposited in use, creates a galvanic action which soon destroys the zinc coating and finally eats through the iron or steel base. To prevent the condensation an air space around the stack is recommended. The stack is made double from the base to a point close to the top, with small iron braces between the inner and outer casings. These may be riveted close to the ends of the sheets in course of construction. The air space may be one or two inches, according to size of smoke-stack, and local conditions.

CHIPS.

Mr. William West, builder, Peterhead, has been appointed temporary surveyor to the Town Council during the absence of Mr. James Dickie on military service.

The salary of Mr. H. J. Hamp, borough surveyor of Swindon, has been increased by £50 per annum, and that of the assistant surveyor, Mr. W. Greenwood, has been increased by £15 per annum.

Mr. Samuel Kearsley, contractor, of 32, Syke Road, Rochdale, has taken out two patents, one for a strutt, puncheon, or prop for strutting, propping, and levering, and another for a patent arch-plate for supporting tunnels and bridges

The late Mr. Joseph Earl Ollivant, of Kensington, has bequeathed £3,000 to the Dean and Chapter of Llandaff for the erection of a new prebendal house to be used as a meeting and robing room for the diocesan clergy, and also for a library.

Gunner F. C. Keen (R.F.A.), the son of Mr. William Keen, superintendent of the City's Artizans' Buildings, Houndsditch, was presented on Sunday week, at Woolwich, with the Military Medal awarded to him for "bravery in the field" at Cambrai.

The Essex Education Committee have agreed to enter into a provisional contract for the purchase of premises with about five-eighths of an acre of land adjoining the County High School for Girls and the Technical College, Colchester, for adaptation as a dining-room, recreation-room, and a woodwork shop.

At West Ham Police Court, on July 9, Arthur Charles Loury, of Barking Road, and Charles Living, jun., of Stratford, estate agents, were summoned for conspiring together to solicit, recommend, and negotiate for Charles Living, jun., in a matter concerning and relating to an appointment as collector of taxes. Both men were committed for trial, bail in their own recognizances of £500 being accepted.

The retirement is announced, through ill-health, of Lieut.-Colonel A. E. Cogswell (T.D.), of the Hants F.A., after twenty-eight years' service as a Volunteer and Territorial. Lieut.-Colonel Cogswell (then Major) went out with the Wessex Brigade to India, and served for eighteen months on the North-Western Frontier. His health then broke down, and he had to return home. He has resumed his work in Portsmouth as an architect and surveyor.

The Secretary of the War Office announces that permits for the release of cement will be issued by the Director of Army Priority (D.A.P. 3 C.), Caxton House, Tothill Street, S.W.1. Applications for permits should be made by the firm or persons requiring to use the cement, and not by the manufacturer or merchant. The quantity required, the purpose for which it is required, and the name and address of suppliers must be in every case be stated.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

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OUR ILLUSTRATIONS.

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Bickley Park Golf Club. View and key plan. Mr. Briant A. Poulter, F.R.I.B.A., Architect.

Housing of the Working Classes, England and Wales. South Wales Urban Areas. First prize design, Class A. Mr. J. A. Hallam, Architect, Cardiff.

Church of St. Mary, Charlton-Marshall, Dorsetshire. John Bastard, of Blandford, Architect, 1713. Repaired recently by Mr. C. E. Ponting, F.S.A., Architect.

Currente Calamo.

"Specific performance" of a contract or agreement for the sale or letting of land, or a house, means that the party who breaks the bargain can be compelled to carry out and complete the contract. This is an equitable power of the Courts which is not available upon every breach of contract for which, usually, the only legal remedy is by way of damages. The right to enforce an agreement specifically is often very important to builders and others, for the payment of damages may not be anything like so satisfactory to the seller or buyer of property as would be the payment of the agreed price and the completion of the contract. The recent curious case of "Deverell *v.* Milne" shows the limits of the Court's jurisdiction in this regard. The plaintiff was a wounded officer and the defendant a lady who, as the judge held, "absolutely agreed" to let him her houseboat for a short term during his leave. She then suddenly changed her mind, and let it to someone else at a higher rent, who went into possession at once. It was shown by plaintiff that the Court can grant specific performance, even of a contract for a yearly tenancy, and, probably, for a shorter term. But Mr. Justice Sargant, though strongly condemning the defendant's conduct, felt bound to hold, with regret, that he could not grant a decree for a specific performance, nor could he make an order to eject the tenants actually in possession, and must leave the plaintiff to his only remedy in damages. But he made the costs in the motion costs of the action, as being all he could do to show his sympathy with the plaintiff. This prompt taking possession by the new tenants had really concluded the case in defendant's favour.

Possibly the anti-gamblers who are so shocked at the idea of the Government issuing Premium War Bonds will object, but we really see no reason why the scheme suggested by Mr. Malcolm Bennett, in the *Journal* of the Institution of Municipal and County Engineers, should not be tried, if not by the Government itself, with its permission, for financing housing schemes. After all, it would only be an extension of the Star-Bowkett ballot scheme. Mr. Malcolm Bennett says quite rightly, as we shall all soon find out, that it will be impossible to finance by charging economic rents, but that there will still be a deficiency to be met from the local rates. As an alternative he suggests the issue of premiated housing bonds bearing a low rate of interest, but carrying the right to participate in a half-yearly prize distribution scheme, about 6,000 cottages annually being given away in this manner. There would also be a number of "credit annuity" prizes, the winners of which would have their rent credited annually as part of the purchase price of their houses. The principal advantages claimed are that the State would provide by *loan* a much smaller sum than it would otherwise provide as a *grant*, and that encouragement would be given to thrift and the individual ownership of cottages. There surely can be no greater objection to balloting for houses than for pictures?

A case of interest and importance to cyclists and those responsible for the maintenance of public highways came on before Judge Shand, at the Liverpool County Court last Thursday, when George Milne, an insurance broker and commission agent, of South Castle Street, claimed damages from the Liverpool Corporation in respect to the tire of his bicycle, which, he alleged, was burst by coming in contact with granite chippings placed on Ullet Road by the corporation, against whom he alleged negligence and misfeasance. Alternatively he contended that the placing and leaving of the chippings on the road was a nuisance. Plaintiff, a cyclist of thirty years' experience, and a member of the council of the Cyclists' Touring Club, contended that the method of maintaining roads by "gritting" them with chippings was a bad one, though it was adopted by the National Road Board and other highway authorities throughout the country. He admitted that he saw the chippings on the road, but continued on his journey, though he tried to avoid them. Several cyclists gave evidence as to the method adopted being one that was likely to damage cycle tires, and it was suggested that the proper method was to roll the chippings in or else use gravel on tarmac roads. For the defence, Mr. J. A. Brodie, city engineer of Liverpool, and Mr. C. Brownridge, borough engineer of Birkenhead, gave evidence as to the method adopted being the universal and proper one, and both said that if the chippings were rolled in the object of putting them down would be defeated, as there would be no secure foothold for horses under certain weather conditions. Mr. Brodie added that in six months 180,000 cyclists passed over Ullet Road, and this was the first complaint received. The judge held that the method adopted was the proper one, that plaintiff's tire was a worn one, and that even if there had been any negligence on the part of the corporation—and he found that there was not—plaintiff had seen the obstacles and had elected to take the risk. He gave judgment for the defendant corporation, with costs on the higher scale, as the case was of public importance.

We have been asked several times lately whether the Local Government Board, or the Treasury, or whoever is to control the financial side of the Government Housing Scheme, is likely to adopt the system adopted by the Ministry of Munitions of engaging contractors to carry out the work for a commission or percentage on the cost of labour, materials and supervision. We do not know, but, if so, it is next to certain the system will be as shamefully abused as it has been, and apparently is still being. The *Slate Trade Gazette* reports the result of a visit paid by a deputation to one job as follows:—

A gang of fourteen men had solved the problem of how to make an easy living, and were dropping up a pile of timber, with their backs. These did not lift a hand for twenty-five minutes. Some labourers were carrying wooden bricks up three flights of stairs, eight bricks at a time, and the average time for each journey was thirty minutes. A continuous line of men were carrying 7 in. by 1 in. boards, 10 ft. long, for a distance of about 400 yards. It took two men to carry one board. In another locality nine men were engaged in filling one wheel-barrow. Then in one room a batch of thirteen joiners had been put on to floor laying, but only one solitary hammer was going. While one of the transport waggons was being unloaded eight men were in attendance. Of these three were working and five looking on. Elsewhere a large gang of men were supposed to be chipping away concrete to receive boards. None of them were working. When a stranger appeared on the scene they began to do something. Several large gangs were doing no work at all.

And these hard-working men are particularly privileged in the way of rations. They could obtain from the canteen joints of beef and shoulders or legs of lamb, etc., without stint. They were also able to obtain such rarities as butter and bacon. Compare this with the lot of the ordinary worker under a private employer. Is there any wonder that

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with such great inducement for Government work a worker should transfer from private to public work?

It is possible, of course, that the information thus gathered has been conveyed to the Ministry of Munitions, and the scandal investigated. That the case was an exceptional one is, to say the least, doubtful.

It has been contended from the first that the Government grant of 75 per cent., supplemented by a penny rate, is not in the least likely to meet the cost of the housing schemes to be undertaken on the lines of the Local Government Board circular, even if economically carried out—much less so if ca' canny is to be the order of the day by the workmen. Here is one detailed estimate which has been drawn up by Mr. A. Turriff, the burgh surveyor of Elgin, which gives the capital outlay and yearly cost of a 120 house scheme, with three rooms per house:—

CAPITAL OUTLAY.

	£	s.	d.
120 houses (each house to have three rooms) at £250 each	30,000	0	0
ANNUAL STATEMENT.			
£30,000 at 8 per cent. (40 years) ...	2,400	0	0
Feu-duty, 10 acres at £10	100	0	0
Fire insurance at 1s. 6d. per cent.	22	10	0
Owner's rates, at 2s. per £	156	0	0
Repairs at 7½ per cent. (private owners usually allow 10 per cent.)	117	0	0
Allowance for empties 2½ per cent.	39	0	0
Rent collection and management at 1¼ per cent.	19	10	0
	2,854	0	0
Rental of 120 houses at £13 each	1,560	0	0
Deficiency	1,294	0	0
	£ s. d.		
To be met by 1d. rate...	160 0 0		
Government grant of 75 per cent.	970 10 0		
	1,130	10	0
Deficiency	164	10	0

That means, as Mr. Turriff points out, that the Government grant needs to be increased to about 88 per cent. If not, the taxpayer and the ratepayer will, we suppose, have to find the difference, and it is likely to be a big one!

The excellent July number of the "Anglo-Italian Review" (London: Constable and Co., Ltd., 1s. 3d.), which has already achieved a position second to none among the monthlies, is rendered additionally attractive by the inclusion of two papers of special interest to our own readers. The first is "Casanova and Venice," by Mr. Arthur Symons, and throws much new light on the career of that "rarest kind of biographer, one who did not live to write, but wrote because he had lived and when he could live no longer." The other is by Mr. W. R. Lethaby, on "Italian Art and Britain," in which, with his accustomed charm and lucidity, its author points out that for two thousand years and more Britain has had art relationship with Italy, and considers at greater length one or two periods when the influence of Italy on Britain has had marked. The first of these was in connection with the remarkable centre of Christian culture established in Northumbria and fostered by several energetic abbots—Benedict Biscop, Ceolfrid, and Wilfrid, which soon produced the poetry of Caedmon and the historical work of Bede. The art correspondence and commerce with Rome at this time must have been very considerable, and the fruit thereof abundant, especially in regard to ecclesiastical, architecture. Says Mr. Lethaby:—

The churches of Northumbria erected in the seventh century were of the Italian type and contained all proper appointments. Wilfrid's Basilica at Hexham was said to be the finest on this side of the Alps, but, of course, this is an excessive claim. The sacristy where the rich treasure was kept was called the *Gazophylacium*, and the great texts of the Bible were, as we saw, called *Pandects*—all very proper and learned. Another of Wilfrid's churches was of the "central-type," characteristic of Byzantine architecture. It had a central tower or domus surrounded by four projecting arms. This central type long survived in Britain. Alfred built a "central" church at Athelney, and the illumination of Canute giving his crown to the altar of the monastery at Winchester shows a circular church.

And what was true of Northumbria was true more or less of the other English monastic centres. Indeed, as Mr. Lethaby says:—"Up to the time of King Alfred Christian art in Britain had been almost entirely in an Italian tradition: there followed an interlude of northern savagery."

THE EIGHTEENTH CENTURY CHURCH OF ST. MARY, CHARLTON-MARSHALL, DORSETSHIRE.

By C. F. PONTING, F.S.A.

(With Illustrations.)

The mediæval interest in this church is limited to the tower, which is a typical example of the western tower added (as was probably the case here) to an older nave at the end of the fourteenth century, and it retains its original arch into the nave, and some windows.

The remainder of the church was rebuilt at the cost of the Rev. Charles Sloper, D.D., Rector, in 1713, when the parapet of the tower was pedimented and a new west doorway inserted. The church, as then rebuilt, consists of nave and chancel under a continuous roof, and without a dividing screen; the roof is tiled on the outside, and the rafters are blocked out internally to an elliptic barrel vault, starting from a deeply-coved cornice—all in plaster. On the north side is an aisle with a flat roof, criled beneath and having a parapet on the outside. The arcade between nave and aisle is an interesting one of Bath stone, having the piers panelled and the arches with architraves and keystones. It will be seen that the aisle is carried westward beyond the east face of the tower. A porch shelters the doorway on the south. The walls are faced with the Melbury green sandstone and flints in alternate bands, and the dressings are of the former.

The fittings of the interior are beautifully designed and carried out: the east wall is richly panelled in oak, with fluted pilasters, having Corinthian capitals flanking the altar and east window; the altar railing is of the baluster type, well designed; the pulpit is an exquisite one with ogee canopy surmounted by a pelican, and the pews (from which the doors have since been removed) are well panelled, while the walls of the nave and aisle are panelled to the height of 4 ft.—all in English oak, cut "on the quarter" to bring out the grain. The font is a free-stone vase on a tall stem, with a cover of oak over which was formerly suspended a cherub—this has since been reinstated. The measured drawings show the church as in 1894.

The architect to whose refined taste this work was due was John Bastard, a native of the neighbouring town of Blandford, who also rebuilt the church, town hall, and the principal houses of that borough after the great fire, which destroyed practically the whole of the buildings on June 4, 1731. It was a fortuitous circumstance that this capable man was on the spot to take in hand so important a work, which doubtless extended over a period of many years; he appears to have been assisted, as builder, by his brother William Bastard, and one of the most interesting houses (which is illustrated in Belcher's "Later Renaissance") is a double one erected for the occupation of the two brothers. The fire must have proved advantageous to the Bastard family—an aspect of the matter which is ignored by John Bastard in the inscription on the interesting temple in the market-place erected over the pump which, with a delightful lack of humour, he hopes will prevent future calamities of the kind. This runs as follows:—

"In remembrance of God's dreadful visitation by fire, which broke out on June 4, 1731, and in a few hours reduced, not only the church and almost this whole town to ashes, wherein fourteen inhabitants perished, but also two villages. And in grateful acknowledgment of the Divine Mercy that has raised this town, like the phœnix, from its ashes to its present beautiful and flourishing state; and to prevent, by a timely supply of water (with God's blessing) the fatal consequences of fire hereafter, this monument of that dire disaster, and provision against the like, is humbly erected by John Bastard, a considerable sharer in the great calamity. 1760."

ROYAL SOCIETY OF ARTS.

REPORT ON THE "OWEN JONES" PRIZES.

The following judges were appointed by the Council to consider the designs submitted: Mr. Alan S. Cole, C.B., Professor W. R. Lethaby, Mr. T. C. Moore, Mr. John Slater, F.R.I.B.A., Sir Frank Warner, K.B.E., and Mr. Arthur Wilcock.

Thirty-seven designs or works were sent in from nine Schools of Art by thirty-one students. The judges report that these numbers are small when compared with those of last year, when one hundred and twenty designs or works were sent in from twenty-two Schools of Art by seventy-three students. The falling off of numbers is attributed partly to war conditions, which are even more strenuous than they were a year ago; and partly to the subjects prescribed for the competition, which are perhaps less attractive than those set in 1917.

The general standard of the work is good, although somewhat uneven, some designs showing quite matured, others very elementary ability. The judges are gratified to find that, generally, greater care has been paid to the technical requirements of the process for which the design is intended, as was suggested by them last year. While they would again insist upon this technical quality, it must be understood that it alone would not secure an award where the artistic quality is low.

The award of the judges are as follows:—

PRIZES.

Alménrader, Dorothy M., School of Art. Hornsey, N. Design for block-printed Wallpaper filling in fourteen colours. Bulley, Mary A., L.C.C. School of Art, Putney, S.W. Two Sheets of Designs for Ceiling papers. Froom, Dorothy M., School of Art, Hornsey N. Design for a block-printed Cretonne in ten colours. Goodale, Winifred, L.C.C. School of Art, Putney, S.W. Design for repeating Tile—with Tiles (unfired).

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Phillips, Margery L., L.C.C. School of Art, Putney, S.W. Design for Encaustic Tiles for floor covering.

COMMENDED.

Berry, Ivy A., School of Art, Hornsey, N. Design for block-printed Wallpaper in sixteen colours. Goodale, Winifred, L.C.C. School of Art, Putney, S.W. Design for printed Cretonne to be executed in nine colours. Grierson, Edith, Municipal School of Art, Manchester. Design for Printed Textile. Hammond, Bertram, School of Art, Macclesfield. Design for Printed Cretonne. Hodgson, Gladys, School of Art, Hornsey, N. Design for block-printed Taffeta in eight colours. Kipling, Arthur W., School of Art, Glossop. Design for printed Cotton fabric in eight colours. Tippin, Alice Bertha, City School of Art, Hope Street, Liverpool. Design for Stencilled Tablecloth with Stencil and preliminary drawing.

Arrangements have been made for the exhibition to the public of the competing designs. They will be on view from July 20 to August 31, from 10 a.m. to 6 p.m., in the Class Room, Department of Textiles (First Floor), Victoria and Albert Museum, South Kensington, S.W.

DECAYING STONE AND ITS PRESERVATION IN ANCIENT BUILDINGS.

An interesting abstract of a paper jointly contributed recently before the members of the Edinburgh Section of the Society of Chemical Science on the important subject of the preservation of building stone by Mr. A. P. Laurie and Mr. Clerk Ranken is published by *Building Industries*.

Various substances have been put on the market with a view to stone preservation, and these substances the authors classified into certain groups. Some of them consist of materials of the nature of paraffin wax dissolved in a volatile solvent, the idea being to fill the pores of the stone with a neutral substance which will prevent further admission of moisture and will tend to bind the particles together; while others consist of solutions of materials like linseed oil, which are gradually converted by the action of oxygen into jellies, and which are meant to fill the particles of the stone. There are others which are intended to act upon the calcium carbonate or sulphate, producing insoluble compounds which are intended to bind the stone together, and there are still others in which two solutions are used with a view to form a precipitate within the pores of the stone itself. In the case of the simplest form of preservative—a solution of a solid which is to be left in the stone on evaporation, like paraffin wax—the difficulty is to ensure that the solid will be left within the interior of the stone, the probability being that in most cases (as a result of capillary action) it will be found in the outer layer. This also probably applies to solutions which are intended to decompose spontaneously, as they will be drawn out by evaporation before decomposition takes place. Better results might be hoped for in the case of solutions which are intended to act on calcite or calcium sulphate already within the stone, and so produce an insoluble precipitate, though, on the other hand, they involve serious questions as to how far it is wise to attack an existing cementing material with a view of forming a new one. In practice it has been noticed that in many cases preservatives, while producing temporary effect, ultimately result in scaling, and the result of the experiments is to show that, even if a stone is sprayed several times with solutions of paraffin wax, it will not be rendered non-porous to moisture. It would be necessary to carry on the loading with paraffin wax to a point which would be quite impossible in practice in order to obtain this result.

But it has also been found that the paraffin wax has a marked effect on the process of evaporation which takes place afterwards. If the stone has been sprayed with paraffin wax before treatment with a potassium ferrocyanide solution, this spraying will only partially prevent the absorption of the solution, but tends to prevent on evaporation the crystallisation of the potassium ferrocyanide on the outside of the stone. The tendency, however, for such crystallisation is to take place principally just underneath the paraffin wax layer. This layer is very thin (the solution of paraffin wax being absorbed readily by the stone), but on evaporation depositing the paraffin wax at or near the surface. It is evident, therefore, that a stone so treated with paraffin wax will still continue to absorb moisture, while the resulting products of decomposition will tend to collect just under the surface layer, and by crystallising out in that position will ultimately produce flaking of the stone. It is probable, therefore, that all stone preservatives of a greasy nature will be peculiarly apt to produce flaking ultimately on the stone, and this raises the interesting question how far the deposit of greasy smoke particles is an important agent in the decay of stone. It is obvious, then, that the first problem is to ensure that the particular material used permanently penetrates to a considerable depth within the stone itself, and the first penetration is of no value owing to the subsequent evaporation. If a piece of stone about one inch in section was saturated with one solution and then poulticed on one side with another solution, that would form a precipitate; the authors found in some cases that there was not only a copious precipitate on the side of the stone that was poulticed, but also a copious precipitate on the back of the stone penetrating a little way into the interior; while in the centre of the stone very little, if any, precipitation was visible.

"If the pores of the stone have been filled to a sufficient depth with an insoluble substance," it is continued, "are we justified in assuming that this substance will form a successful binding material, holding the particles of the stone together? A large number of organic substances—such as linseed oil, paraffin, wax, casein, resins, and gums—have the property of cementing particles together, and we also know from the study of stones themselves that many substances also will act as a cement, even a crystalline body such as calcite forming a firm and strong cement between particles of quartz. We are also familiar with the cementing properties of the jelloids produced during the setting of Portland cement, but in the case of stones these inorganic cements have been produced very slowly and under special conditions, while in the case of Portland cement the partial change into a gelatinous mass with the minimum quantity of water present is very different from the conditions of precipitation when a stone is treated in the usual way with two precipitating substances. We are therefore not justified in assuming that even such substances as silica or alumina are going to act as a cementing material of any value when precipitated rapidly within the pores of the stone. We decided in the first place to study what happens when a stone is treated with a simple solution, whether of a salt in water or of a material like paraffin wax dissolved in a volatile solvent. A large number of slabs, about four inches each way and about one inch thick, were cut from Cullaloe stone, a fairly porous stone, consisting almost entirely of silica, the analysis being silicious matter 99.17 per cent., Al_2O_3 0.11 per cent., Fe_2O_3 0.07 per cent., $MgCO_3$ 0.12 per cent., combined water, etc., 0.46 per cent., moisture 0.03 per cent. The binding material between the particles of quartz is apparently a silicious deposit, and the stone was therefore selected as not being likely to introduce any chemical complications in the experiments. A series of wooden frames were made, with a flange, similar to picture-frames, into which the slabs of stone could be fitted and pressed up against a rubber washer by means of clamps. In this way one surface of the stone was exposed, and could be treated by spraying with various materials, while at the same time the creeping of the solution round the edges of the stone was prevented by the rubber washer. In addition to spraying we ultimately adopted, as a much more effective method, covering the surface with paper pulp soaked with the solution with which we wished to treat the stone, and covering the paper pulp again with lead foil, the whole being pressed gently against the stone so as to remain in contact. Such solutions thus laid on would remain moist and could be renewed."

Our Illustrations.

UNITED UNIVERSITIES CLUB, SUFFOLK STREET, PALL MALL EAST, S.W.

There are two large photographs of this club house in the Royal Academy Exhibition this season. We reproduce the general view to-day. The other picture is a detail of the entrance front of the building facing west in Suffolk Street. Our copy of this will appear in an early issue. The United Universities Club was erected some time ago, and is familiar to many of our readers as one of the best known works by Mr. Reginald Blomfield, R.A. The sculptor of the figures and decorative work round the main entrance is Mr. Henri Pegram, A.R.A. The other external carving throughout was executed by Mr. Aumonier.

BICKLEY PARK GOLF CLUB HOUSE.

This golf club house has been carried out in stock brickwork, with sand-faced tiles for the roofs, the hips being covered with bonnet-shaped coping tiles pointed in cement. The builder was Mr. G. W. Hunt, of Hampstead. The inside is very simple in whitewashed brick and oak from the estate. The piers are red brick and the floors are of oak. The architect is Mr. Briant A. Poulter, F.R.I.B.A., of Craig's Court House, Whitehall. The perspective sketch reproduced to-day is now at the Royal Academy Exhibition.

HOUSING OF THE WORKING-CLASSES, ENGLAND AND WALES: SOUTH WALES AREA. FIRST PRIZE DESIGN, CLASS A.*

The idea in these plans was to give a living-room with only one door, thus making the apartment comfortable. It has been found that many tenants prefer this type of room, as it is not a passage-way to the scullery. I have been designing this class of home for some years in Wales, and find that for those tenants on an estate who prefer the scullery entering off the living-room it should be planned as in the 18-ft. frontage house, *i.e.*, that the passage-way should be along one wall and not across the room or by the fireplace. The bathroom is placed on the ground floor not only for the sake of economy, but in order that the man coming home from the pit or works can get straight to the bath without going through the house or upstairs. A separate room for the bath is essential, in order that work can go on in the scullery at the same time the bath is in use. The scullery is kept small, otherwise there is the tendency that it will be used as a living-room and the living-room as a parlour. A cycle shed is essential, as the men often have to go some distance to the pit or works. The first floors are shown as 3½-inch concrete with the Indented Bar Company's reinforcements, as this saves height in the building. I have found these floors satisfactory in a scheme now in course of erection. Sash windows have been shown, as they are the most practical from all points of view. The cement finish on the outside can be finished with various surfaces on different groups. Dormers have been eschewed, as they are more costly and are an expensive item for maintenance, and sloping ceilings do not allow enough room for furniture.

J. A. HOLLAM,
Member of the Town Planning Institute.

THE EIGHTEENTH CENTURY CHURCH OF ST. MARY, CHARLTON-MARSHALL, DORSET.

This interesting and very unusual church is described in the article on page 50, contributed by Mr. C. E. Ponting, F.S.A., the architect, who restored the building so carefully and well a short time since.

* The following are the dates of the issues of THE BUILDING NEWS containing illustrations of designs for Housing the Working Classes in England and Wales, submitted in the L.G.B. and Royal Institute of British Architects' various competitions in various areas of the country:—April 10, 17, and 24; May 1, 8, 15, 22, and 29; June 5, 12, 19, and 26; July 10, and this issue. The fourteen numbers can be had, post free, for 7s. 6d.

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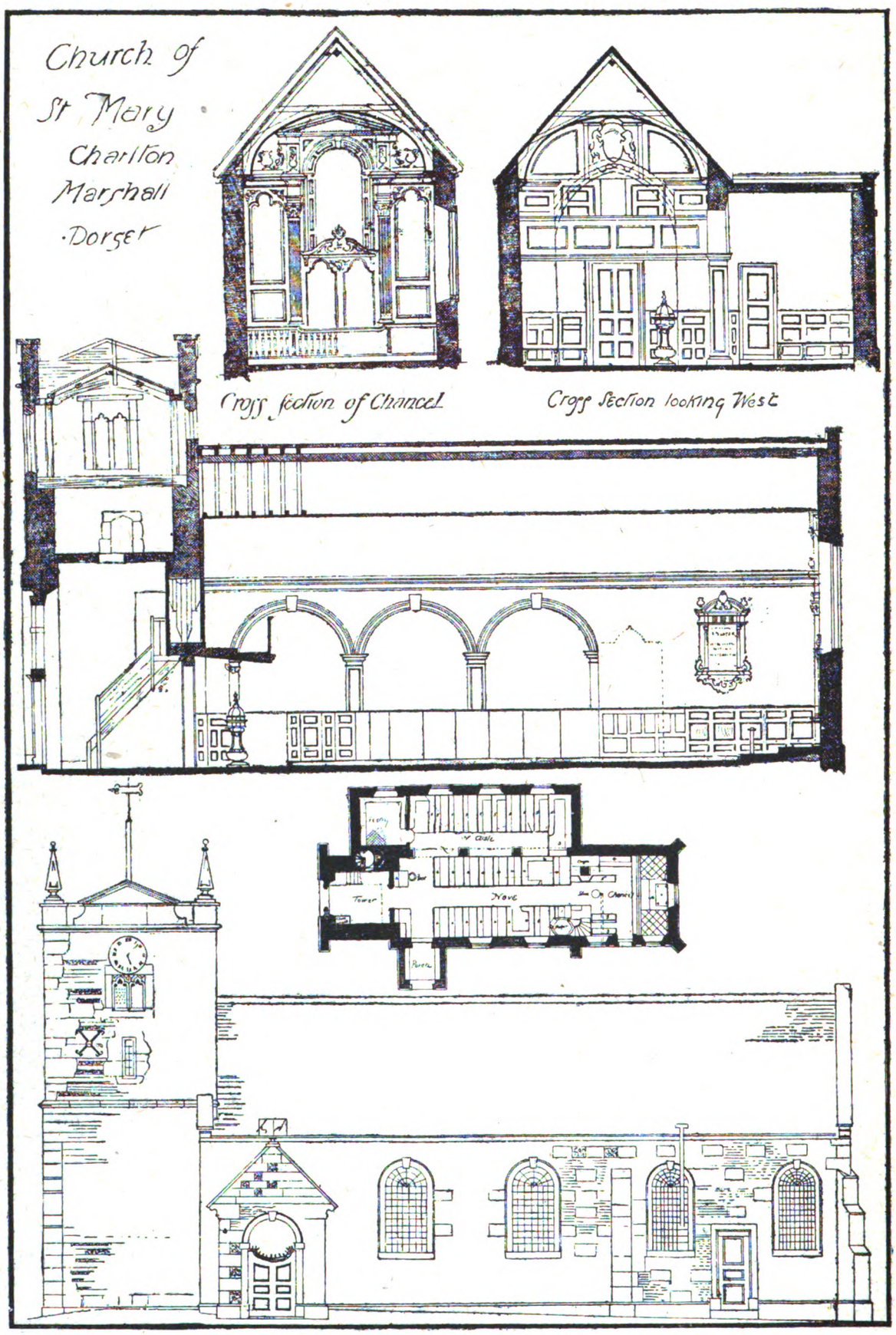

CHURCH OF ST. MARY, CHARLTON-MARSHALL, DORSETSHIRE, A.D. 1713.
(JOHN BASTARD, of Blandford, Architect.)
REPAIRED RECENTLY BY MR. C. E. PONTING, F.S.A., Architect.

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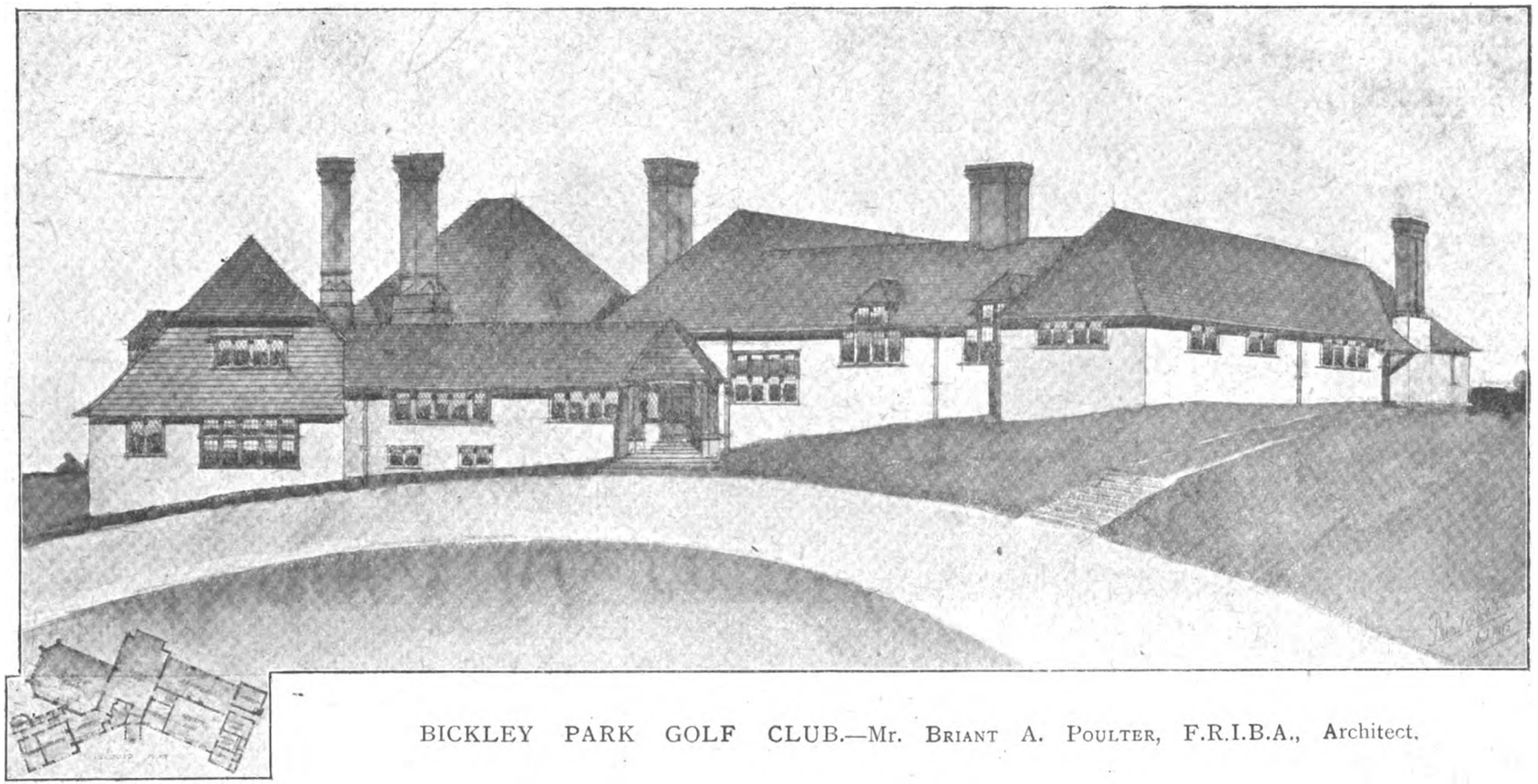

BICKLEY PARK GOLF CLUB.—Mr. Briant A. Poulter, F.R.I.B.A., Architect.

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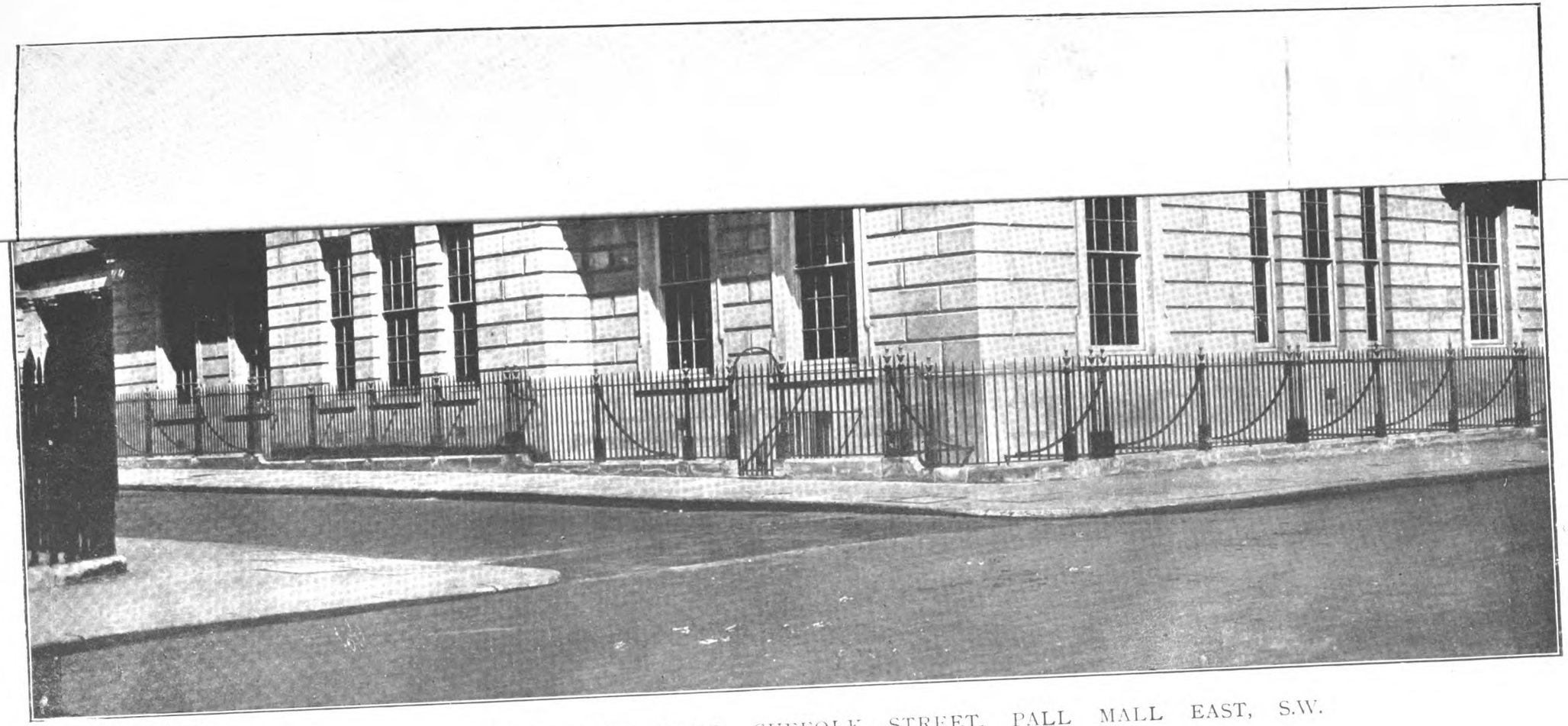

Bedford Lemere, Phot.

THE UNITED UNIVERSITIES CLUB, SUFFOLK STREET, PALL MALL EAST, S.W.

Mr. REGINALD BLOMFIELD, R.A., Architect.

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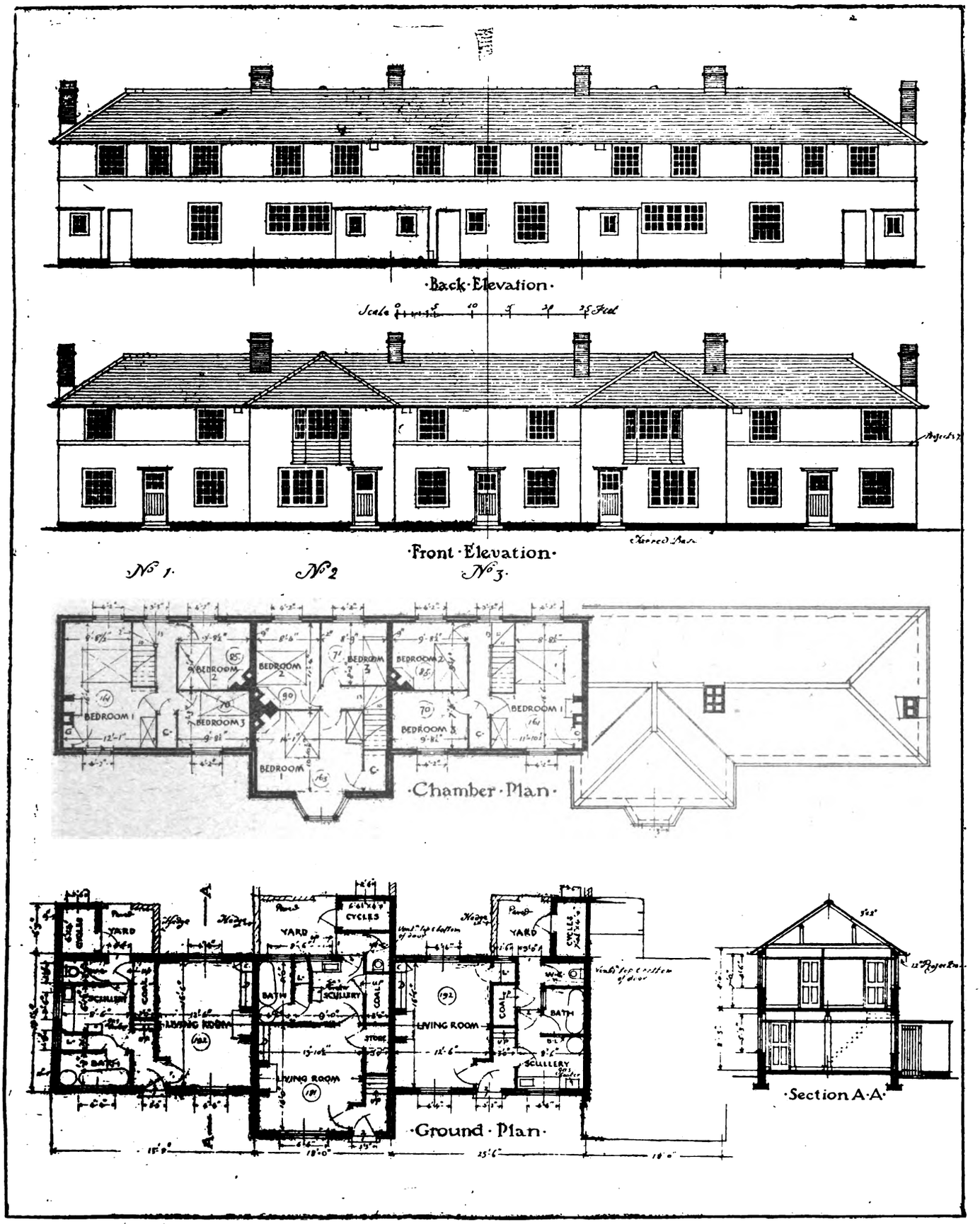

HOUSING OF THE WORKING CLASSES, ENGLAND AND WALES: SOUTH WALES AREA.
FIRST PRIZE DESIGN, CLASS A.—Mr. J. A. HALLAM, Architect, Cardiff.

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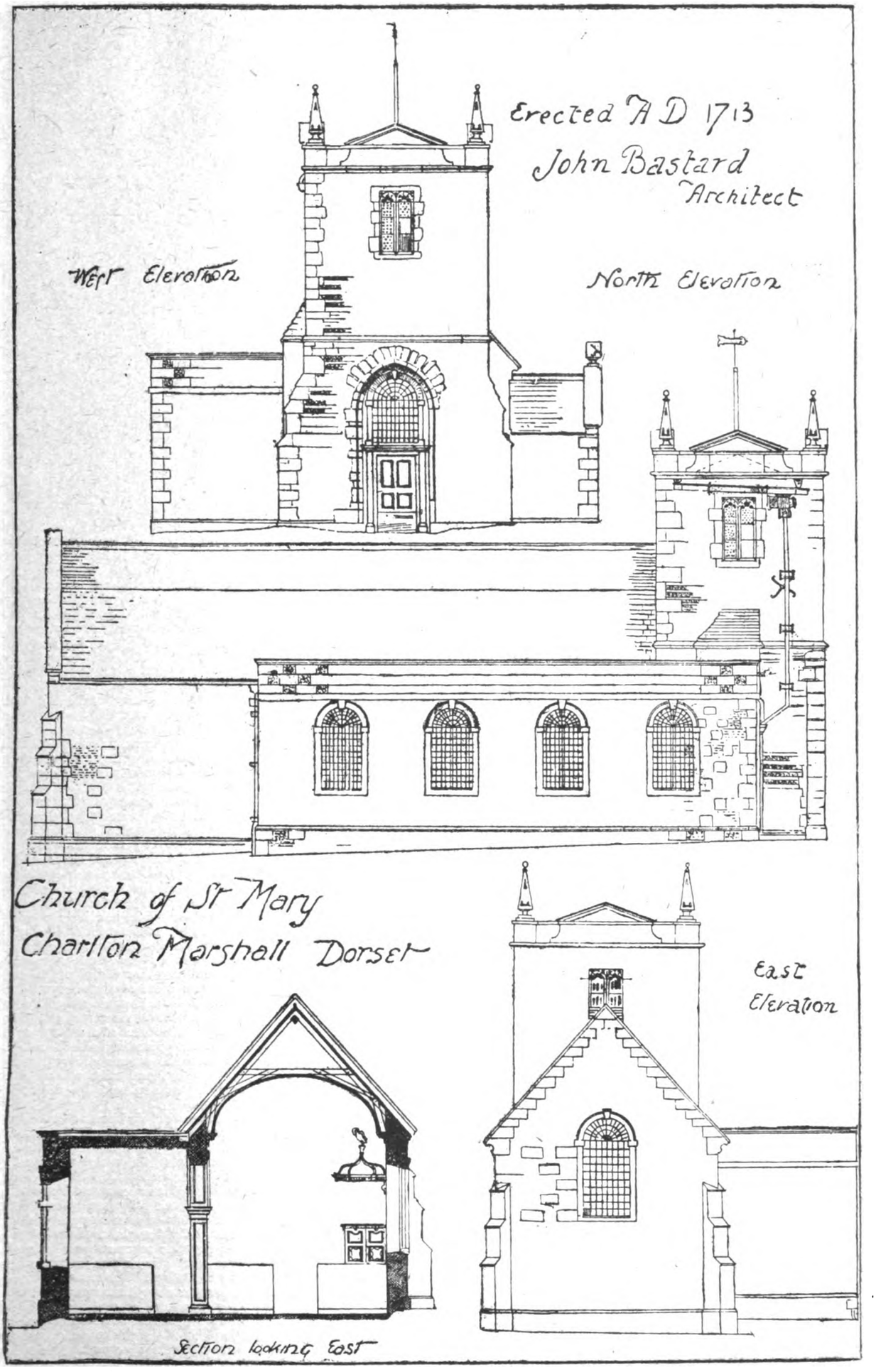

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TIMBER AND TIMBER INDUSTRY.

(*Continued from page 47.*)

In the case of the most important of all coniferous timbers, the Scots pine, the specific gravity and compressive strength of the heaviest wood are more than three times those of the lightest wood. If comparison be made of the timber of this tree grown on similar soils and with similar treatment, but in different climates, changes in structure of the wood are revealed to the naked eye. As the climate becomes colder growth is slower and the annual growth-rings of the wood are narrower, but this diminution of the thickness of the rings takes place more at the expense of the soft light spring-wood than of the heavier harder red summer (autumn) wood. Hence the narrow-ringed wood is heavier and stronger. When, however, the climate becomes too severe—as in regions nearing the Arctic zone—the attenuation of the growth-rings continues, but the wood is lighter in weight and weaker; such is the red deal exported from the White Sea. A knowledge of these facts rendered possible during the present war the correct anticipation of the occurrence in the highlands of Scotland of slow-grown, light Scots pine, eminently suited for use in aeroplanes. Variations in the soil and in the light to which Scots pine is exposed cause corresponding changes in the structure and properties of the wood. One example of the comparative effects of knowledge and ignorance in these matters may be cited in reference to the present war. Germany having made thousands of mechanical tests and observations on the structure of Scots pine growing in various forests of that country was able instantly to secure rich supplies of this wood of exactly the quality required for aeroplanes. In this country, until the present war began, we did not know the mechanical values of any kind of timber whatsoever growing in the United Kingdom, still less did we know the values for the different varieties of one timber, nor where these varieties were to be found: we were compelled to find and then test the woods that might be suitable.

Results similar to those obtained in regard to Scots pine hold good for Norway spruce (*Picea excelsa*), as is proved by the subjoined values obtained by Professor Janka on this wood grown in Austria.

Width of annual ring (in millimetr's)	Specific gravity (×100).		Compression parallel to the grain (crushing stress in kilograms per square centimetre)	
	Seasoned.	Absol'tely Dry.	Seasoned.	Absolutely dry.
.5—1	44.9	41.7	397	743
1—1.5	44.3	41.3	395	729
1.5—2	43.1	40.2	386	708
2—2.5	41.9	38.9	364	666
2.5—3	41.3	38.4	353	647
3—3.5	39.9	37	339	622
3.5—4	40.2	37.2	342	619
4—4.5	39.1	36	314	581
4.5—5	40.2	36.8	308	554
Above 5.	38.1	34.9	306	510

By way of contrast to the softwoods discussed, hardwoods of the type of the oak and ash may be considered. In these, as the growth is more rapid, the increased width of the annual rings is often mainly caused by disproportionate additions to the hard, heavy, fibrous summer-wood produced outside the soft, weak, porous spring-wood. In the case of the oak there is probably a limit to this tendency, as towards the south of Europe oak timber, though wide-ringed, is slightly softer than that grown in our own climate. The weakness of narrow-ringed porous ash-timber is familiar to all practical men, especially in connection with those trees that have grown slowly under the influence of excessive shade.

In timbers of this type there is a decline in weight and strength when the annual rings are of the same thickness, but there is a wider zone of porous wood (due to a larger number of series of pores). M. Thil found, for instance, in oak, where each annual ring was half a centimetre in thickness, that the tensile strengths of three samples, showing respectively 1, 2 to 3, and 3 to 4 series of pores in the spring zone, were 17.1, 13.6, and 12.7 kilograms per square millimetre.

The tendency for opposite effects to be induced in pine and ash timbers by widening or narrowing of the annual rings explains one practical matter in connection with parts of aeroplanes in which the wood is used in the form of thin laminae or is spindled out; the pine must not be wide-ringed, whereas the ash must not be narrow-ringed. Another practical lesson in this connection may at once be learnt by anyone observing the variety of qualities or grades of blocks of Scots pine paving streets in London. He will then note that in certain parts of London the use of inappropriate grades of this wood causes great economic loss and unnecessary public inconvenience.

Mechanical tests on timbers, apart from providing one of the bases for sound forestry, are of value in yielding the necessary information as to the minimum dimensions required by constructional wood used for specific purposes. They thus render possible the utmost economy and the substitution of one wood for another.

Afforestation in Great Britain can yield considerable supplies of softwoods only many years hence; consequently the provision of substitutes in the form of hardwoods grown specially in British tropical colonies would be of great economic importance if practicable. There are, however, both technical and commercial difficulties in the way.

The extensive use of softwoods as structural material is due to several sets of factors. First, coniferous trees grow in the north-temperate regions, forming forests that are pure or contain large numbers of the same species of tree. Softwoods are thus accessible and can be obtained cheaply: this is especially true of Baltic softwoods. These coniferous timbers are usually easy and cheap to work, often display high strength-values when compared with their weights ("specific gravities"), tend to shrink less than hardwoods, and generally are more easily and rapidly seasoned than are the latter, while as sources of fibre and paper they yield a very high percentage of fibre.

On the other hand, the hardwoods abounding in the vast forests of the British tropical and southern Dominions and Colonies are generally more distant, and even the West African Colonies are farther away than the Baltic. Moreover, the hardwood trees in them grow together in mingled confusion, hundreds of different species growing side by side. Consequently definite kinds of hardwoods are less accessible than are softwoods.

Yet many of the hardwoods have certain advantages on their side. In moist tropical countries their growth is generally much more rapid than is that of the northern conifers, and there is no present demand for certain of them; indeed, in some cases they represent obstructions that have to be removed and destroyed. Considering the amount of loss involved in the artificial destruction of tropical trees, the utilisation of such waste wood forms a problem of first-class economic import. Investigations will show that numbers of these inferior neglected woods can be utilised either as substitutes for softwoods of the better quality, or as fibre-yielding material to be used in the manufacture of paper, or chemically to yield alcohol, and so forth.

As regards hardwoods of better quality, and often greater weight, some may be employed as substitutes for hardwoods—such as oak, teak, and mahogany—that are partly imported from non-British countries, or may be more vigorously exploited in foreign lands. But to accomplish these aims full information as to the mechanical and working properties of such woods is required. We have very little detailed information as to the mechanical and other properties of such timbers. Yet investigations conducted during the present war have demonstrated the suitability for use in aeroplanes of certain mahoganies and other hardwoods from British West Africa, Papua, Queensland, British East Africa, and India, and of certain softwoods from New Zealand and British East Africa.

These considerations lead once more to the study of the structure of timbers, whose significance in affording guidance to the qualities and uses of woods has already been indicated. Research into the structure of timbers is also necessary as a means of rendering possible the critical *identification*. Such identification is needed in order that a person shall secure exactly the kind of wood that he requires. At present the commercial nomenclature of timbers is in confusion. For instance, in various parts of Australia the same names are applied to different timbers, and different names to the same timber: such practice militates against the sale of these woods in this country, for it may be said that every kind of wood has certain uses for which it is fitted better than any other. To select another example: a number of kinds of wood varying widely in colour, structure and properties, are sold in this country under the name of West African mahogany. Apart from the disappointment experienced frequently by purchasers, and the consequent tendency for West African mahogany to be discredited, this particular case is not devoid of national significance. I believe that the most motley array of such so-called mahoganies before the war came from the Germany colony, Cameroon, which did not export anything like the same quantities as did the British and French colonies. The natural result would be that the wrong attachment of the name of mahogany to the German spurious mahoganies would inflate their price, while lowering the price of British and French genuine woods. In importing the latter Germany would profit doubly.

So far no reference has been made to the great part played by water present in wood. By exhaustive tests it has been proved that the strength, stiffness, and hardness (when measured by indentation) of one and the same piece of wood vary inversely as the amount of water contained in the wood-substance itself. The table already given shows that in the case of spruce the absolutely dry wood has far greater resistance to crushing than has the merely seasoned wood. The pliability and ductility of wood, on the contrary, increases with rise in the water-contents, and greatly so if this be accompanied by rise in temperature. Wet-steamed wood can, therefore, be compressed to form railroad keys or bent to yield furniture; whereas very dry wood permits of only slight deformation, and in this sense is brittle.

So far two reasons exist in favour of drying wood before use—decrease of weight, and improvement of mechanical qualities; and these are accompanied by a third, which is associated with the changes of shape and dimensions of wood as it absorbs or emits water.

When once all the water has been removed from the cavities of the wood (and even before this when drying is relatively rapid) wood shrinks steadily as it continues to dry. Shrinkage is far the least along the grain; while across the grain it tends to be much greater circumferentially than radially. Hence, during drying, a piece of timber would undergo considerable distortion were it not that wood possesses ductility. As a matter of fact such distortion in the form of warping or twisting often does take place in bastard-cut boards or planks when the process of drying is carried on too rapidly, and the warping may be accompanied or replaced by splitting in a radial plane.

This differential shrinkage along and across the grain partially accounts for the practice of cutting up highly figured wood and knotty burr-wood into thin and relatively small veneers. Somewhat akin to this veneering process is that of the manufacture of ply-woods. In three-ply wood, for instance, as the outer sheets or plies have their grain in a direction at right angles to that of the middle sheet or ply, the outer and middle plies tend to check each other's tendency to shrink or increase in surface. Moreover, since wood is much stronger along than across the grain the three-ply possesses a combination of transverse and longitudinal strength impossible in a single piece of the thickness equal to that of the three-ply. In ply-woods the plies glued together may number from three up to seventeen or perhaps more, and may be composed of a single kind or several kinds of wood. The manufacture and use of ply-wood is only

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in its infancy, and is bound to increase greatly, as, apart from the merits already mentioned, it renders possible the structural utilisation of cheap and relatively weak woods, which, if desired, can easily be impregnated with substances that render them decorative, fireproof, or resistant to decay. While ply-wood and the woods yielding them are practically exclusively imported from foreign countries, there certainly exist in the various countries of the British Empire timbers that are not being utilised at all or to best advantage, but yet are eminently fitted for use in ply form. But our knowledge of the technology of ply-wood requires amplification by research on a whole series of problems concerning the woods and adhesives suitable.

To return to the question of the relations subsisting between wood and water, it is known that a piece of wood continues to dry until at least its surface is in moisture-equilibrium with the water-vapour of the surrounding air. Thereafter it will absorb or exhale water according as the air becomes drier or moister, so that it is always shrinking or swelling. By limiting these interchanges of moisture, coatings of varnish, paint, and the like reduce such movements; but up to the present no one has solved the profoundly important problem of rendering wood absolutely impervious to moisture.

The preceding remarks provide sufficient justification for the *seasoning of timber*. Such seasoning was originally, and is still usually, accomplished by storing the felled wood in the open air, with or without a roof to screen it from rain and direct sunlight. This so-called "natural seasoning," being dependent upon climate, is prolonged and irregular, sometimes in abeyance and at other times too rapid. The prolonged storage not only ties up capital, but also involves loss of wood through decay or boring insects; while its occasionally excessive rapidity introduces loss due to case-hardening, warping, or splitting.

The early discovery that seasoning is the consequence of a process of desiccation led to the drying of wood by artificial heat. Primitive methods caused unduly rapid superficial desiccation and consequent development of defects (splits, brittleness and so forth). Improvements, including the regulation of temperature, moisture of the air, and air-currents in a drying chamber or kiln, have rendered possible the balanced drying of the inner and outer parts of the timber, and have culminated in modern methods by which wood subjected to the severest strains that it ever encounters, namely in aeroplanes, can be reliably seasoned in kilns. These results have been attained solely through the most careful research, involving the use of instruments registering the changes in temperature and moisture in kiln and wood, and including investigation into the causes of such defects as brittleness, case-hardening, collapse, explosive splits, and so forth. Not all woods are artificially seasoned with equal facility. For instance, the oaks among hardwoods and swamp cypress among softwoods require special and careful treatment; on the contrary, when compared with hardwoods, softwoods are more easily and rapidly seasoned, and can be safely exposed to higher temperatures, as their structure is less complex and their shrinkage generally less. Hence experiments are required to reveal the best, including most economic, treatment of timbers of different kinds and different dimensions. Even when wood and dimensions are the same the most economic treatment will depend on the use to which the wood is to be put, and the urgency of the demand; for instance walnut used merely for panelling can be exposed to much more rapid and drastic seasoning at high temperatures than if it be intended for use in the propellers of aeroplanes.

Such investigations will certainly repay the expenditure of time and money, not alone in the resultant saving of time, but also in the economy of timber. As regards the former, by kiln-drying the time of seasoning is reduced from years to months, and from months to days, or, for certain purposes, to hours. While, as regards economy of timber, Tiemann calculates that in the United States the losses of timber due to natural seasoning are 5 and more than 12 per cent. respectively in softwoods and hardwoods, and that these can be reduced to 2 per cent. In view of the fact that in certain types of kiln-drying waste steam may be used, the economic significance of these facts is doubly clear.

One method of introducing heat and moisture into a kiln is to supply steam. Drastic steaming at high temperatures permanently weakens wood, even if it be relatively brief. On the other hand, prolonged steaming or "stewing" of wood in a confined space improves the qualities of woods in certain directions, in that it decreases their tendencies to warp and sometimes renders them more decorative by changing their colours; for instance, beach is thus induced to become somewhat mahogany-like in tint and in resistance to warping. This off-shoot of artificial seasoning provides an additional line of inquiry leading to the improvement in the qualities of inferior woods, especially from our tropical colonies.

The seasoning of wood has yet one more important bearing on the economy of timber: it increases the resistance to decay. Decay or rot, in at least the overwhelming majority of cases, is caused by wood-destroying fungi, which demand for their development a certain amount of water.

The protection of wood from decay is a matter of great national importance. In our shallow and damp coal-mines, where the air is warm and moist, wood-destroying fungi are often so abundant and so active that timber is rendered useless in a few weeks or months. In 1913 the value of the imports of pit-timber into this country was nearly 4½ million sterling. An American investigator calculated that in the United States, if 40 per cent. of the pit-wood was treated with antiseptics, the annual saving in that country would be more than fifty million cubic feet of timber. I myself have seen a coal-mine in which the untreated pit props had to be replaced in four to twelve weeks; whereas creosoted props side by side with them had already lasted for eight years. The neglect of adequate protection of wood from decay in this country is emphasised by the fact that I can secure no approximate estimates of the loss in pits, in buildings, fences and posts, or ships. The resultant loss must amount to millions of pounds annually, and much of that loss could be economically prevented.

Two methods, namely sanitation and antisepsis, offer themselves as means of decreasing or preventing the decay of wood.

As in pathological problems generally, and especially in epidemics, sanitation is in the end the cheapest method; but it demands a knowledge of the life-histories and conditions of activity of the organisms doing the damage. A few facts and examples may serve to illustrate the type of research that is urgently called for.

Fungi, which spread by means of their threads or microscopic spores, can be found growing in any house or damp coal mine. Some of these are practically harmless, others actively destroy wood; it is therefore necessary to identify the fungi present, and to investigate their action in wood. After that the first practical problem in sanitation is to determine the source of the noxious forms, which may come from the forest, timber-yards, builders' yards, ships, or coal mines, or elsewhere. The neglect of the elements of sanitation may be noted in builders' yards, where infected wood removed from houses is stored side by side with fresh timber and sometimes ready for incorporation into a new building. In a very large timber yard in London I have seen the fructification and spawn of the most virulent dry-rot fungus lying almost in contact with immense stacks of softwoods.

The fungi responsible for dry rot and decay generally vary in their demands for moisture. Some demand quite moist wood, and can readily be exterminated by ventilation and protection of the wood from wet; yet a few species, when once established, can manufacture water and thereby attack the driest wood. Some are readily killed by heat and cannot thrive at relatively high temperatures, others are more resistant to heat.

Again, certain species send their threads into the wood and spread internally at a slow pace, keeping at a distance from the surface. Cases due to this type of fungus are easily dealt with by removing the attacked piece of wood, whereas other species not only penetrate the wood but produce sheets or cords that rapidly swoop over the surface of the wood, grow over and penetrate the walls, and so transmit the infection through a complete building or roadway in a coal-pit.

Some species can attack only one kind or class of timbers, so that sanitation may take the form of avoiding the use of these. Other species can destroy woods varying from pine to oak and even teak.

This last consideration brings forward the question of the natural durability of timbers, upon which experiments are essential from the direct practical point of view, and because the investigation of the relative immunity of certain species may afford a clue to a cheap and simple method of increasing the durability of woods that normally possess little.

As an accessory to or a substitute for sanitation, timber may be protected by the use of antiseptics such as zinc chloride, creosote and its derivatives, and various other inorganic and organic substances. These differ from one another in their fungicidal efficiency, some being completely effective against all fungi, others being (in practicable concentrations) lethal only to certain kinds of fungi. Moreover, the durability conferred depends upon the depth to which the antiseptic penetrates. Hence the precise process (whether painting or injection under pressure) and the precise fungicide to be used will depend partly upon the length of time that the timber has to last. These will also depend upon the situation of the timber: creosote with its powerful scent and discolouring qualities cannot be used in dwellings; whereas zinc chloride is not eminently suited for superficial coatings out in the open as it readily washes off. The discovery of cheap antiseptics suitable for various situations is a line of research of such fundamental importance as to be worthy of patient chemical and mycological investigation.

Time forbids my entering upon the less familiar but not unimportant question of protecting wood on land against boring insects, and of timber in sea-water (in piles, docks, etc.) against boring marine animals.

Just as the antiseptic treatment of wood renders possible the replacement of valuable durable timbers by cheap perishable ones, so likewise does the *fire-proofing* of wood subserve economy by permitting thin pieces of inferior wood to be substituted for thick pieces of more costly wood; specifications demanding that the doors of buildings shall be made of teak of great thickness are therefore extravagant, even though decorative. Investigations have rendered possible the fireproofing of wood to such an extent that even thin three-ply can be made to resist for minutes or hours a temperature of 3,000° F. The process of satisfactorily fireproofing is, however, not a cheap one, as the cheaper substances used are apt to wash out, to attack metals, and even favour the development of decay-inducing fungi. A problem of vital importance to builders, and even to the Empire, is the discovery of a cheap solution that shall simultaneously protect wood against decay and fire, and shall be suitable for use in dwellings.

Another method of improving woods, and especially those of inferior quality, is that of changing their colours and thereby improving their decorative value. By this means unmarketable colonial woods may be rendered of use. Such changes may be induced by steam, by chemical treatment with vapours or solutions, by treatment with dyes, or finally by exposing the wood to the action of fungi or bacteria. Except as regards the production of fumed oak by ammonia vapour, this branch of industry has been neglected in this country, which imports such stained woods as grey sycamore, artificial ebony (for piano-keys, knife-handles, and so forth).

As an illustrative case, reference may be made to grey sycamore, which is obtained from ordinary white sycamore by means of simple and cheap chemical treatment. Yet for years white sycamore was exported to Paris and Hamburg for treatment, and re-imported into England at an increase of price perhaps fifty times the true cost of the pro-

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cess. Great Britain does, however, export one unique type of coloured wood, brown oak, which, owing to its richness of tint, is much more valuable than the ordinary British oak. At the Imperial College it was discovered that the brown colour is induced by a fungus, and that by growing the latter upon ordinary oak this is converted into the brown wood. It would doubtless be possible to devise a method by which this exceedingly profitable conversion could be conducted on a commercial scale.

The chemical utilisation of wood forms too wide a subject to be dealt with except by allusion. As a means of using up waste wood (sawdust, shavings, slabs) in the sawmill, or waste trees in forests of the Colonies, mention may be made of the destructive distillation of wood, which thus becomes a source of methyl alcohol, formalin, acetic acid, acetone, and charcoal. In countries having feeble supplies of coal this same process can be made to yield illumination and power. Other problems concern the most economical manner of using waste wood directly as a fuel.

In connection with several lines of investigation, mention has been made of the utilisation of waste wood, and in order to illustrate the fact that this alone represents a problem of national importance I will mention that in this country there is one single wood-using establishment in which the normal annual loss of wastage of timber represents a sum approaching £20,000.

For the purpose of demonstrating what the British Empire has done and is doing in the way of forwarding technical knowledge relating to timbers, I will compare its activities with those of two other great Powers, the United States and Germany.

Although France produced the first model investigations on the mechanical properties of wood, Germany in recent times has done a large volume of excellent work and correlated the results with the structure of timbers concerned. Along the two lines she has been ably seconded by Austria, and these two partners have conducted minute and detailed research on timber-structure from the point of view of identification. To Germany more than any other country we owe our modern knowledge on the fungi inducing decay in timber and on modern anti-septics suited for combating them. Germany, together with Austria, has largely contributed to the development of the technical art of changing the colours of woods by chemical means and by dyes. Her work on the utilisation of wood as a fibre material, as fuel, and by destructive distillation has given to her the leading place in these fields.

Germany has, in addition to her forestry schools, various institutes from which emanate the results of researches in the various branches of the subject. And the State has founded, staffed, and equipped, an institution whose sole function is to investigate the problems of the decay of timber and its prevention.

Germany thus spends thousands of pounds annually on timber investigation. She also promotes the use of her colonial timbers by this means, and by describing or referring to them even in small text-books.

The United States has produced many valuable results on the mechanical properties of North American timbers and on technico-practical questions concerning American woods as sources of fibres and of chemical bodies. Her workers have also published much detailed original information on the structure and identification of the indigenous timbers, while in one branch, that of artificial seasoning of wood in kilns, the United States leads the world in original investigation and practical invention.

Apart from possessing some forestry schools, the United States has one institution specially founded for the investigation of timber problems, namely, the Forest Products Laboratory, at Madison. I believe that the annual sum paid for researches in this laboratory exceeds £40,000. This laboratory works in close touch with men engaged in the timber trade. And the timber trade journals published in the United States give, by the very nature of their articles, sufficiently clear evidence of the intimacy of the relations between wood industries and technical science.

Great Britain doubtless was handicapped by the lack of any great forests that should stimulate research of the highest type on the mechanical qualities of timbers. First-class original work up to modern standard has never been produced in this country on this branch; the work done has been narrow in scope, because done by engineers, who even to-day are profoundly ignorant of the basic facts on the subject of wood-structure. The sole comprehensive modern researches on the mechanical properties of wood conducted in the British Empire emanate from Australia. In regard to the structure of timber this country has contributed little, except fragments concerning colonial woods. But in India Mr. Gamble has produced a great work on the microscopic structure of Indian woods. Although England at the outset led the way in providing antiseptics and means of injecting them into timbers, her original scientific activity in this direction ceased decades ago; while as regards the investigation of the fungi causing decay in timber our Empire has done practically nothing.

Altogether, famous as this country has been in the past from the practical standpoint as regards timber, she has been a nonentity as a contributor to the scientific technology of wood. The time has passed when it is safe to continue such a policy.

In the United Kingdom, although there are some incipient schools of forestry, and there is a professor of the technology of woods at the Imperial College, the State neither maintains any technical authority on timber in its employ nor devotes any sum to research on the subject. The timber industries, likewise, have no technical consultants, nor do they subsidise research. Hence, where the Governments of the United States and Germany spend annually thousands of pounds on timber-research conducted by specialists, our Government spends not a penny, though the wood imports amount in value to more than forty million pounds sterling annually. The Forest Research Institution in India, and Forest Products Laboratory in Canada, represent the official provision made by the British Empire for the Investigations on woods coming from forests that are larger in extent and variety than those governed by any other State in the world, and whose value must be reckoned in hundreds of millions of pounds.

But there are signs of awakening as regards research. The awakening is Imperial, not merely national; and this is of vital importance because this country and the remainder of the British Empire should be linked together in policy as regards the great timber problem of the future, and therefore linked together in attacking the problems whose solutions will dictate that policy and will indicate the best method of utilising our common timber resources. In this country and in Australia Departments of Scientific and Industrial Research have arisen, and it is to be hoped that the great trades will also take part in this forward movement, for the greatest advances can be achieved solely by the co-operation of the State, the trade, and the technical specialist—and this is especially true of the great timber industry.

As a war memorial, an organ is to be placed in the hall at Alleyn's School, Dulwich.

It has been decided to complete the restoration of St. John's Church, Reading, at a cost of about £200.

Mr. J. G. Coates, of Wellingborough, has been appointed surveyor to the Swanage Urban District Council.

Mr. James A. Swan, F.R.I.B.A., late of 56, Newhall Street, Birmingham, has removed to Daimler House, Paradise Street, Birmingham.

"It is stated that a new dock is to be commenced by the Government on the South Coast, but it has not yet been definitely decided when the venture will be abandoned."—*Punch.*

Mr. Nathaniel Fortescue, of The Drive, Walthamstow, contractor, who died on April 19, aged seventy-nine, at The Vintry Works, High Street, Walthamstow, has left estate of the value of £156,370, the net personalty being £11,448.

THE LONDON COUNTY COUNCIL.

At the meeting of the London County Council yesterday the following recommendation of the General Purposes Committee was agreed to :—

THE SUPERINTENDING ARCHITECT.

The Council on July 31, 1917 (p. 725), decided that as the retirement of Mr. W. E. Riley, the architect of the Council and superintending architect of metropolitan buildings, would cause inconvenience to the public service, his services should be retained until October 12, 1918. In view of existing conditions and of the obvious inconvenience of his retiring on the expiration of the period for which his services were retained, we consider that his retirement should be further postponed for one year. Mr. Riley has expressed his willingness to meet the Council's convenience. We recommend "That as the retirement of Mr. W. E. Riley, the architect of the Council and superintending architect of Metropolitan buildings, would cause inconvenience to the public service, his services be retained until October 12, 1919."

The satisfaction with which his professional brethren who have had relations with Mr. Riley during his term of office will read this announcement goes without saying, so cordial and helpful have been his services during a time of many complications. They are possibly less known to the general public of London, with whom his personal contact is less frequent, but to no public servant is London more indebted, and the decision of the Council, facilitated by Mr. Riley's willingness to postpone his well-earned retirement, will, we hope, receive some public mark of recognition such as it deserves.

HOUSING AFTER THE WAR.

The Housing of the Working Classes Committee have informed us (The Improvements Committee) of their intention to recommend the Council to authorise them to arrange a conference with the Metropolitan Borough Councils and local authorities in districts surrounding the County of London on the subject of housing after the war, and have represented to us the desirability of such a conference being empowered to discuss in relation thereto the subject of town planning. Without expressing any opinion on the question of town-planning in London under the provisions of the Housing, Town Planning, etc., Act, 1909, we agree that the conference must be in a position, in order to survey the whole field, to take into consideration the question of town planning, so far as it is ancillary to the main question before them. We recommend, subject to approval of the recommendations of the Housing of the Working Classes Committee as to a conference on the subject of housing after the war, that at the conference to be arranged with Metropolitan borough councils and local authorities in districts contiguous to London on the subject of housing after the war, the discussion of the question of town planning, so far as it is ancillary to the question of housing after the war, be authorised.

The recommendation referred to summarises a Report of the Housing of the Working Classes Committee which appears in this week's Agenda of the Council, and is a sane and practical statement of the present position, and outlines generally and broadly the line which, along the seven years after peace, the Council will pursue. The Report continues :—

It is open to the council to pursue in this period a policy of quantity or a policy of quality. To justify a policy of quantity it would be necessary to ascertain first of all the amount of additional accommodation likely to be required. Present conditions are such as to preclude the possibility of making any estimate of this. On the other hand, no uncertainty exists as to the facts necessary to justify a policy of quality. The number of houses in London requiring improvement from the point of view of sanitary arrangements, distribution, age, and the like is readily ascertainable, and the amount of work involved in dealing with these houses and providing healthy homes instead can be estimated. It is a kind of work to benefit most those who are poorest and most unsuitably

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housed; it belongs peculiarly to local government authorities throughout the country; and it has a far-reaching influence in raising the general standard of public health as well as on the individual occupant of the new houses. These and other such considerations as ought, in our opinion, to guide the framing of a public policy, have caused us to conclude that the policy of the council should be one of quality.

The questions of the pace at which this broad general policy shall be pursued and its extent are of the first importance. On these questions the keynote should, we think, be acceleration. Subject to long-promised legislation being obtained, we are prepared to recommend the Council to proceed at a pace and to an extent which is the measure of our conviction that the policy we advocate is sound and necessary. Apart from acceleration due to amended legislation, both pace and extent depend upon a variety of factors, among which may be mentioned the cost and availability of labour and materials, the cost of acquiring property, the facility with which property can be dealt with or acquired and houses be demolished and the extent and availability of building land. All these matters are important, all are difficult of estimation, but nearly all are reducible with more or less accuracy to a money basis. We think, therefore, that the pace and extent of the Council's policy may conveniently be expressed in terms of capital expenditure spread over the period which we have already mentioned—seven years from the conclusion of peace. Taking this basis, we have carefully assessed the amount of work which, in the light of experience, we think the Council could reasonably hope to undertake, and have arrived at the conclusion that this may be put at a total of £3,500,000, spread over the period of seven years at the rate of about £500,000 a year. We are not prepared to say in detail the exact meaning of these figures in improved slum areas and wholesome dwellings, but that the magnitude of the undertaking may be, perhaps, the better realised, we would draw attention to the fact that, even with the costly processes involved in the existing law, the Council, for nearly £2,000,000, has, in the past, cleared 55 acres of slums and provided new dwellings in connection therewith for over 16,000 persons.

To carry out the policy which we have thus outlined the general procedure would be, first, by way of building under Part III. of the Housing Act of 1890 new houses both upon estates ripe for development and upon sites adjoining or near actual insanitary or overcrowded areas. This action will, we hope, serve to create a healthy draught from insanitary to wholesome property. The estates already in the Council's possession and available for this purpose cover 106½ acres, and are capable of accommodating an ultimate population of some 17,000 persons on the basis of two per room, while doubtless some opportunities will occur for the acquisition of partially developed estates in suitable localities. Secondly, and as far as possible concurrently, we would proceed to deal with insanitary houses and areas; and thirdly, and also concurrently, we would propose the erection of new dwellings as land thus became available.

Lieutenant E. B. B. Newton, borough surveyor of Paddington, has been reported "missing" since the recent heavy fighting on the western front.

Mr. Lionel Percy Smythe, R.W.S., R.A., whose death is announced, was born in 1840, and chose chiefly subjects among rustics and fisherfolk. He is represented in the Chantrey Collection by a water-colour, "Germinal." He was elected A.R.A. in 1898, and advanced to full membership in 1911.

The death has occurred at Llandudno of Mr. E. Paley Stephenson, engineer to the Llandudno Urban District Council. A son of the late vicar of St. James's, Birkdale, he was a member of the Institute of Civil Engineers, a member of the Liverpool Engineering Society, and a member of the Association of Municipal and County Engineers. Some ten years ago, owing to an unfortunate breakdown in health, he was appointed consulting engineer to the council, an office which he held until his death. He was sixty years of age.

THE NEW COAL, GAS, AND ELECTRICITY RATIONS.

Of all the rationing orders yet made the new Household Fuel and Lighting Order seems to us the most unsatisfactory in scope and method of issue yet promulgated, and in every quarter nothing but protest against it is heard. In the first place, the Order has been in operation since the first of this month, but copies are not yet to be had, although it occupies seventeen pages in the *London Gazette* of July 2. Moreover, at the office of the Coal Controller of our own borough we were told on Monday that the necessary application forms will not be available till about the middle of next month. So that for six weeks at least we are subject to most drastic limitations in ignorance of their extent, and with no opportunity of asking for what we want.

Many of the clauses in the Order are perplexing, and will be subject to official interpretation. This has been foreseen, and it is laid down that "there shall be an appeal to the Controller from any decision of the Local Fuel and Lighting Committee upon the application, interpretation, or meaning of this Order, or of any rules or instructions issued thereunder, or upon any question of principle arising thereout." The decision of the Controller is to be final in every case.

AN IMPOSSIBLE ALLOWANCE.

Surprise and indignation has been aroused by the table setting out the allowance of fuel and gas or electric light. So small is the allowance of gas that many readers seem convinced that the table is wrong. Yet it seems accurate enough, but certainly inadequate. Despite the explanations accompanying this table, many readers are obviously in a state of perplexity, as revealed by a correspondent, who states that his fixed ration of gas under the Order will be 15,000 cubic feet, an impossible allowance in view of the fact that he consumes about 14,000 cubic feet in a light quarter. But this 15,000 cubic feet of gas is not a fixed ration. It is a minimum allowance, which may be supplemented by saving on the fuel allowance and transferring the amount saved to the lighting allowance, one ton of coal being equal to 15,000 cubic feet of gas or 800 Board of Trade units of electricity.

"Let us hope that you will continue to let light into dark places," said Sir Donald Maclean at the House of Commons Tribunal last Thursday, in granting three months' exemption to a window-cleaner, who said he was wholly engaged in cleaning the windows of Government buildings. A pious prayer, but——?

As the result of conferences between the Ontario Government and the Provincial Housing Commission, Mr. Hearst, the Premier, announces, $200,000 (£40,000) will be set aside for urban and rural municipalities for housing at 5 per cent. No house may cost more than $2,500 (£500), and the charcter of the buildings and their location must be approved by the Government.

An offer to provide a gallery for modern foreign art in London made by Mr. Joseph Duveen has been accepted by the trustees of the National Gallery and the First Commissioner for Works. Mr. Duveen will provide the funds to enable the building to be commenced directly after the war. Plans are already under consideration.

The death took place on July 15, at his residence in Edinburgh, of Mr. Hugh Cameron, Royal Scottish Academy, a well-known Scottish genre painter. Mr. Cameron was born in 1835, and first exhibited in the Royal Scottish Academy at the age of nineteen. On two occasions only since 1854 was his work unrepresented. He was a pupil of Robert Scott Lauder, was elected A.R.S.A. in 1859, and attained full membership in 1869.

It has been decided that the Liverpool War Memorial shall consist of the marking off of the eastern arm of the first transept as a chapel enriched by a reredos and stained glass windows, and containing an alabaster cenotaph erected on a low platform of black and white marble. On the cenotaph will be a richly bound volume in which will be inscribed the names of all the fallen. The designs have been prepared by Mr. Gilbert Scott, the cathedral architect.

PROFESSIONAL AND TRADE SOCIETIES.

THE INDUSTRIAL COUNCIL FOR THE BUILDING INDUSTRY.—A meeting of the above council (to be known hereafter as the first annual meeting of the council) will be held at the Grand Hotel, Colmore Row, Birmingham, on Thursday, August 1, 1918, at 10.30 a.m., for despatch of business, including the report of inaugural meeting, to serve as minutes, and matters arising; confirmation of election of administrative committee; to consider the dratt constitution, and resolve thereon; to receive recommendations of the administrative committee as to the formation of a resettlement committee, and resolve thereon; to consider the desirability of adopting a form upon which claims for the reimbursement of expenses shall be made, also the report of the sub-committee appointed to draft same, and resolve thereon; and any other business which may be presented by the chairman.

THE NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS OF GREAT BRITAIN ARD IRELAND.—The half-yearly general meeting of this federation will be held at the Grand Hotel, Colmore Row, Birmingham, on Wednesday, July 31, 1918, at 10.30 o'clock in the forenoon. On Tuesday, July 30, at 10.30 a.m., the council will meet in the Grand Hotel, Colmore Row, Birmingham, and at 1 p.m. for luncheon to members thereof. At 6.30 p.m. there will be a reception by the president of the Midland Federation to members of the general meeting and their ladies, and at 7 p.m. dinner, to be followed by a concert. On Wednesday, July 31, 1918, at the Grand Hotel, an official welcome will be given by the Lord Mayor of Birmingham (Alderman Sir David Brooks, G.B.E.). At 10.45 a.m. the half-yearly general meeting of the National Federation of Building Trades Employers will be held, followed by luncheon to the delegates and their ladies. The agenda includes the report, the report and recommendations of special council meeting re form of contract, the report of housing committee, and as to the following resolution sent up by the Midland Federation:—"That, in consideration of the promise made of Government support for housing schemes, the National Federation be asked to approach the Local Government Board and request them to arrange facilities to be granted to private enterprise in the erection of the houses for working classes now under consideration, and that it is desirable that the National Federation should prepare a scheme outlining how such assistance can be given;" a request from London to call the attention of the Accident Insurance Companies to the fact that at present rates they are drawing about double the premium per man for insurance in consequence of the rise in wages, and requesting them to make equitable abatement in future premiums; to communicate with the Inland Revenue authorities, calling attention to the enormous amount of clerical work carried out for them, and to inquire what scale of payment they are prepared to make to cover the net cost of such clerical work to assist them in collecting this revenue; and to consider the following resolution from the Southern Counties Federation:—"That in the opinion of this Federation it is essential that Government departments and public bodies throughout the United Kingdom should, for a suitable period after the war, refrain from commencing any large building or constructional work (unless of very urgent national importance) until the public repair work (such as roads and railways) and private work which has accumulated during the period of the war has been completed or overtaken; and that the National Federation be requested, either by petition or deputation to the Premier, to impress the importance of this matter upon the Government. It is also suggested that all the associations throughout the country should approach their members of Parliament with the same object." The following resolution has been sent up by the Midland Federation:—"That this meeting, having heard that the operatives in several districts are asking that bonuses granted during the war should be merged into their standard rate of wages,

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strongly recommends the National Federation to settle a principle for national application in regard to the desirability or otherwise of fixing fall-back rates, having regard to the difficulty of foreseeing what conditions will obtain, and what will be the purchasing power of money after the war."

Building Intelligence.

AUSTRALIA HOUSE.—The King will open Australia House, the headquarters of the Commonwealth of Australia in London, at noon on Saturday, August 3. Built at the corner of Aldwych and the Strand, the effect as the building is approached from the east is impressive. The entrance is flanked by two groups of statuary. That on the right, showing a dying explorer and his companion, represents the awakening of Australia: on the left is a group symbolical of the youthful industries of the Commonwealth and its prosperity. The architects are Messrs. A. Marshall, MacKenzie, and Son, and their design is based on the strong columns of Roman architecture, with some qualities of the French eighteenth century style. The main entrance hall is a notable feature, with its marble walls and decorations, and there is an uninterrupted view of 200 ft. through the entrance hall, vestibule, and exhibition hall, to Melbourne Place. Throughout the interior Australian wood, marble, and stone have been plentifully used, and the internal decorations are in keeping with the rest of the building. The building has ten floors, allocated as follows:—Lower basement: stores, treasury, cinematograph and lecture hall, and heating apparatus. Upper basement: strong-rooms and other accommodation for Commonwealth Bank, and photographic department. Ground floor: entrance hall exhibition hall, Strand branch of the Commonwealth Bank, and offices of the Orient Royal Mail Steamship Line to Australia. Entresol floor: telephone exchange, claims branch, and Inland Revenue. First floor: rooms of the High Commissioner, official secretary, assistant secretary, suite of rooms for the Prime Minister of Australia, and intelligence and registration branches. Second and third floors: claims branch and Inland Revenue. Fourth floor: accounts, customs, shipping, priority, pensions, and supply departments. Fifth floor: offices of H.M. Australian Navy, and the Commonwealth Line of steamers. Sixth floor: military adviser, arsenal, munition workers and publicity departments. The construction of Australia House was begun by the Commonwealth Government in 1911, when the present High Commissioner for Australia (Mr. Andrew Fisher) was Prime Minister. The foundation-stone was laid on July 24, 1913, by the King. The site cost £379,756, and the total cost when the building is complete will be not far short of £1,000,000. Illustrations have been given of the building in our issues of July 4, 1913, when we gave an exterior and plan, and October 20, 1915, showing an interior of the exhibition hall and sections.

INCORPORATED CHURCH BUILDING SOCIETY.—This society held its monthly meeting on Thursday last at 7, Dean's Yard, Westminster. Grants were made in aid of providing a chapel in connection with a women's club at a munition centre, £75; towards enlarging the churches at Gillingham (Parish Church), Kent, £200, and Holly Bush, All Saints, near Ledbury, £50; and towards repairing the churches at Brentford, St. Paul, Middlesex, £50, and Hartland, St. Neotan, Devon, £100. Grants of £175, £150, and £100 respectively were paid towards the provision of three mission churches or hostel chapels in certain munition centres. The society accepted the trust of a sum of money as a repair fund for the Church of the Holy Trinity, Derby.

A memorial window for Major H. Cecil Johnson, D.S.O., 60th Rifles, has been erected in Tadlow Church. The dedication service took place yesterday at 3.30.

Our Office Table.

By the Timber Order, 1918, which was issued last Wednesday, the Board of Trade have prepared for the introduction of a rationing scheme for imported soft-wood timber, which came into operation on Monday last. A schedule of maximum prices for imported timber will be issued, but will not apply to existing stocks, which will still be subject to the previous regulations as to price. Stocks which under previous regulations may not be sold at prices above those ruling on January 31, 1917, are to be notified to the Controller of Timber Supplies for his decision regarding the price at which they may be sold. The permit system is extended to home-grown converted timber on lines somewhat similar to those which have for over a year applied to imported soft wood. Other matters dealt with include the position of timber on estates which are about to be sold; also sales of timber by auction and by tender. Particulars of the new form of application for permits for home-grown or imported timber may be had on application to the Controller of Timber Supplies, Branch 2, at 80, Newman Street, Oxford Street, London, W.1.

Some of the qualities required in good mortar are described in a new book issued by the Atlas Portland Cement Company, 30, Broad Street, New York. A series of specifications, suggested for various uses of mortar, is also included. Tables of strength and physical and chemical properties of Atlas-White cement are given at the back of the book. Of equal interest are the photographic illustrations. The Wisconsin State Capitol, the Yale Club, New York, the United States Post Offices of New York and Washington, the Mary Baker Eddy Memorial, the Grand Central Terminal, New York, and many other public buildings of note in which Atlas-White mortar was used are among them. This booklet will be sent to any architect interested in the subject, upon request to the Atlas Portland Cement Company, 30, Broad Street, New York City.

The Birmingham Housing and Town Planning Committee have prepared a report of considerable length on "Housing Policy after the War." The circular of the Local Government Board, it is pointed out, makes no provision for the encouragement of private enterprise in the building of dwelling-houses, and the Birmingham Committee having given special consideration to this phase of the question are strongly of opinion that easy loan facilities should be provided either by the Government or the municipality, so that builders may be enabled to embark on large building schemes. The immediate shortage of houses in Birmingham is about 12,000, and it is hoped, after the cessation of hostilities, to build at the rate of 5,000 per annum. The committee hope to be in a position to give evidence before the Housing (Financial Assistance) Committee of the Ministry of Reconstruction as to the need of the encouragement of private enterprise by loan and the provision of land. It is held, also, that valuable work may be achieved through the instrumentality of public utility societies, and one of the aims of the Town Planning Committee is to obtain powers by which assistance may be given to such societies, possibly by financing them under the scheme of the Local Government Board. The committee are of opinion that there is a large field for co-operative effort between employers and workmen, and it is pointed out that in many places the question of housing development through the medium of public utility societies has been taken up by trades unions.

An American method for building high brick walls by using standard lengths of scaffolding is described in "Contracting":—These trestles are made with light vertical steel angles fitted with diagonal braces and with top and bottom bent clamps adjustable by screws to engage light wooden horizontal pieces. After serving as caps for the lower story they also serve as sills to receive the lower ends of the next sections of trestles, and so on, enabling the trestles to be built up indefinitely to the required height with transverse steel braces and with longitudinal diagonal strips clamped on by adjustable devices engaging the verticals. In this case a two panel extension of the falsework was built at right angles to it, providing a tower for a material hoist. The trestles come in five standard lengths adjustable to any height from 16 in. to 8 ft. They are very quickly put together by common labour and are closely packed for storage or transportation, requiring much less space than wooden trestles.

It is said that the Committee on Home Affairs is making such progress with the Ministry of Health Bill that there is good prospect of its early introduction into Parliament. The nucleus of the Bill is the creation of a central authority to absorb the health functions now discharged by the Local Government Board, the Insurance Commissioners, and several other Government Departments. The Bill, which applies to England and Wales, is a short measure, defining the powers to be exercised by a Health Minister, and leaving him to propose schemes to the Cabinet for carrying them out most effectively. "It will not," says the *Times*, "be linked up at the beginning with such ambitious reforms as the break-up of the Poor Law." We suppose not! That hole-in-the-corner system will probably resume its futile and prodigal career as soon as the war is ended!

Under the auspices of the Labour Housing Association a Housing Conference will be held at the Temperance Hall, Derby, on Saturday, August 31, 1918, at 10 a.m. prompt, chairman Mr. J. W. Ogden, J.P., supported by the Parliamentary Committee of the Trades Union Congress and representatives of the National Labour Party, to demand State loans free of interest for housing schemes, to state the minimum accommodation demanded for the houses of the people, to declare that it should be a condition of all Government grants to local authorities for housing purposes that the local authority should have taken steps to submit the plans for the houses for the criticism of representatives of Industrial Women's Organisations, and other business. The hall is twenty minutes from the Midland Railway Station, and Ashbourne Road or Uttoxeter Road trams come near the doors. The Great Northern station is near the hall. Applications for information, tickets, etc., should be made to Mr. J. Silas Whybrew, Secretary, 136, Hampstead Way, London, N.W.4.

The first volume of a publication devoted to Southern Slavonic architecture, issued by Mr. John Murray, includes a review of Serbian church architecture by Sir Thomas Jackson, an introductory analysis by M. Kosta Jovanovic, genealogical tables of the Serbian kings, and a large folding map of South Slav territory. The illustrations number over fifty full-page plates, and are accompanied by explanatory notes giving historical and technical information. Owing to the Austrian occupation of Serbia, the choice of illustrations has been necessarily limited to such photographs and drawings as could be procured from Allied and neutral countries. In consequence this volume does not contain all the Serbian Orthodox Church buildings, but only those procurable under present conditions. Still, the series of types assembled is representative of a vernacular version of Byzantine architecture hitherto little known, and sufficient information is given to awaken a wider interest in the subject. In a subsequent volume it is intended to present examples of the classical architecture of the Roman Catholic churches in Jugo-Slav territory.

Officers of the Tylers' and Bricklayers' Company as under have been elected:—Master, Mr. Frank Percy Rider, of Stanstead House, Durand Gardens, Stockwell, S.W.; Upper Warden, Mr. Charles James Smithem, 1, Laurence Pountney Hill; Renter Warden, Mr. Thomas Charles Mansfield, Higher Drive, Purley.

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July 31, 1918. Volume CXV.—No. 3317.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

The United Universities Club, Suffolk Street elevation detail, Pall Mall East, S.W. Mr. Reginald Blomfield, R.A., Architect.

Typical Venetian Houses near the Palace of the Campanile. Sketched by Mr. C. Maresco Pearce.

Tuberculosis Dispensary, Sims Street, Sheffield. Plans, elevations, and sections. Mr. F. E. P. Edwards, F.R.I.B.A., City Architect.

A Scheme for the Housing of Consumptive Families. By Dr. James T. Neech, M.D., D.P.H., Medical Officer of Health for the Borough of Halifax, and Mr. Joseph F. Walsh, Architect, Halifax.

Currente Calamo.

Now that the American Institute of Architects has agreed to recognise the right of its members to advertise, it will be interesting to watch the methods adopted to secure publicity. The permission, at any rate, shows a breaking away from the ultra-conservative attitude of conventionalism that has in America and here been detrimental to the progress of architecture in this country. It probably heralds other changes later of a more far-reaching effect, which will bring architects and architecture into prominence quite creditably, but much more effectively than some of the means proposed with that perfectly legitimate end in view. None of us, of course, wish to see the styles and methods of the patent medicine vendor or the big departmental stores followed; but, as a beginning, surely no more objection could be taken—say to the inclusion by the architect of his name and address in our own "Directory" pages than to the posting of his name on a building in course of erection under his superintendence?

The business-like way in which the housing of the great armies of the United States has been conducted by the American authorities contrasts markedly with the waste and ineptitude which have characterised similar Government work here. The building operations were undertaken by what is called the Construction Division of the American army. This division has a personnel of 5,000 officers and men, who, however, do not erect the buildings themselves, but see that all is done by contractors. Everything is done by contract, on the system described as the "cost plus, with sliding scale and fixed maximum fee," the fixed fees ranging from 7 per cent. on very large contracts. The fee is set when the contract is let, and if the cost of the work exceeds the estimate of the cost the contractor gets no additional compensation. The Construction Division has completed about a hundred undertakings, including the thirty-six cantonments and camps dubbed the "soldier cities." The total cost of the cantonments for the national army under conscription was about £29,000,000 sterling, of which £800,000 went in fees to the contractors. The camps for the National Guard cost some £8,000,000, and the contractors' fees were more than half a million sterling.

The new Timber Order, which came into operation on July 22 is a distinct discouragement to owners of the product of many years' growth and much self-sacrifice. Henceforth, no person may, by auction or otherwise, sell or offer for sale any home-grown timber, whether felled or standing, unless he has obtained a permit from the Controller. In the case of estates or timber-bearing lands which are offered by auction, the auctioneer or the vendor, where the contents exceed 10,000 cubic feet, must submit full particulars of the timber and also supply a valuation which must be made known at the time of sale. That effectually bars legitimate competition, and is shortsightedly hard on the seller. The obligation on the retailer to fix his sale prices on the standard basis is also embarrassing. How is he to get out the price per standard of two or three pieces of boards? The maximum prices are certainly anomalous. Those for White Sea goods are considerably higher than those at which the Government last took over wood from the trade, and we shall not be surprised if the whole scheme is found as unworkable as the first scheme promulgated was.

It has been decided by a County Court judge that the Increase of Rent (War Restriction) Act, 1915, does not prevent the rent of small houses of £26 rateable value being raised in a case where the tenant has given notice to quit. This seems rather hard in the present dearth of houses on tenants who are unable to find another house owing to the scarcity of dwellings. In the case referred to, which was tried at Barrow, Mr. H. Tyson Chambers sued William Murray Smellie for £40 10s., being double rent for a dwelling-house, No. 2, Clarence Road. The ordinary rent of £25 had been paid in, leaving £20 5s. as double rent in dispute. Mr. Major, for the plaintiff, contended that under an old Act, when a tenant gave notice to quit and continued in occupation after the expiration of the notice, double rent could be charged. Mr. Lee, who appeared for the defendant, on the other hand held that the Increase of Rent (War Restriction) Act, 1915, prevented the rent of small houses of £26 rateable value being raised. Judge Taylor ruled that the last Act did not apply to the case where the tenant had given notice to quit. Mr. Lee then explained that it was a case that arose owing to the war and congestion in Barrow. His client had bought a house before he gave notice that he was leaving the house he then occupied, but he could not get possession of his own house, and, therefore, he had to remain where he was. He submitted that the last Act was passed for the protection of people in such exceptional circumstances. Judgment was given for the plaintiff for the amount claimed.

The building business has probably suffered more than any other by reason of the war. This is mainly due to the stoppage of building, by which its life has been suspended. Then, such work as could be done was hampered by high prices and shortage of labour. Nor is this all, for, besides builders, many who have an interest in land have found themselves tied up and entangled in the consequences of this cessation of building work. The Courts can and will relieve those who so suffer "serious hardships" as the result of a broken contract or of unexpected developments. The Courts (Emergency Powers) Act, 1917, enables much to be done, and the recent case of "Electric Pavilion (Marble Arch), Limited, *v.* Lorden" shows how that Act may be practically applied. There, the plaintiffs had agreed to erect buildings on two plots of land, A and B, at stated rents for each, separate leases to be granted on completion. B not being ready in time, the lessee granted plaintiffs a lease of A only at a rent equal to that for both buildings, to be reduced when B was completed. The plaintiffs had assigned all their interest in B to the defendant, who was to indemnify them against the proportionate rent upon B until this building was completed. The defendant rightly went on with the work until the Ministry of Munitions stopped his building after he had expended a large sum. Plaintiffs had obtained a declaration that the defendant must still indemnify them as against the rent upon B, and he now asked for relief under the Act, as this was a case of "serious hardship." It was a very complex tangle, but Mr. Justice Astbury, in the end, cut the knot, by holding that it would be a serious hardship for the defendant to have to pay the full rent upon B, with which he could

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do nothing; and, as big profits had been made on A, and the rent now claimed by plaintiffs would almost entirely go to pay income tax and excess profits tax, he should suspend the payment of the rent on B upon conditions. So the defendant was granted the relief sought under the Act.

If the present war is responsible for rendering many of our collections of art treasures more or less inaccessible to the public, it may be recalled, as the *Manchester Guardian* reminds us, that the Franco-German War was indirectly responsible for placing us in possession of the Wallace Collection, so named after Sir Richard Wallace, whose centenary was not forgotten last Friday. It is generally understood that Wallace was the half-brother of the fourth Marquis of Hertford and the son of Marie Fagnani, who married the third Marquis, the "original" of Thackeray's Marquis of Steyne. Wallace lived a good deal in Paris, and there he devoted his attention to his half-brother's art collection, having dispersed his own in 1857. During the siege of Paris he remained in the city, equipped ambulances, and endowed the Hertford British Hospital, which has done good service during the present struggle. It has been estimated that Wallace expended about two and a-half million francs in relief work, and for his care of the British inhabitants during the siege Queen Victoria created him a baronet. On the death of the Marquis of Hertford the collection passed into Wallace's keeping, and the disturbed condition of France after the war induced him to bring it over to England. It was Wallace's desire to make the collection a national possession, but the stupidity of officialdom, which raised objections about its accommodation, frustrated his wishes in his lifetime. Wallace was married to the daughter of a French officer named Bernard Castelnau, and on his death the collection became her property. Fortunately Lady Wallace retained the services of her husband's private secretary, who diplomatically secured the fulfilment of Sir Richard's wishes respecting the ultimate destination of the Wallace Collection.

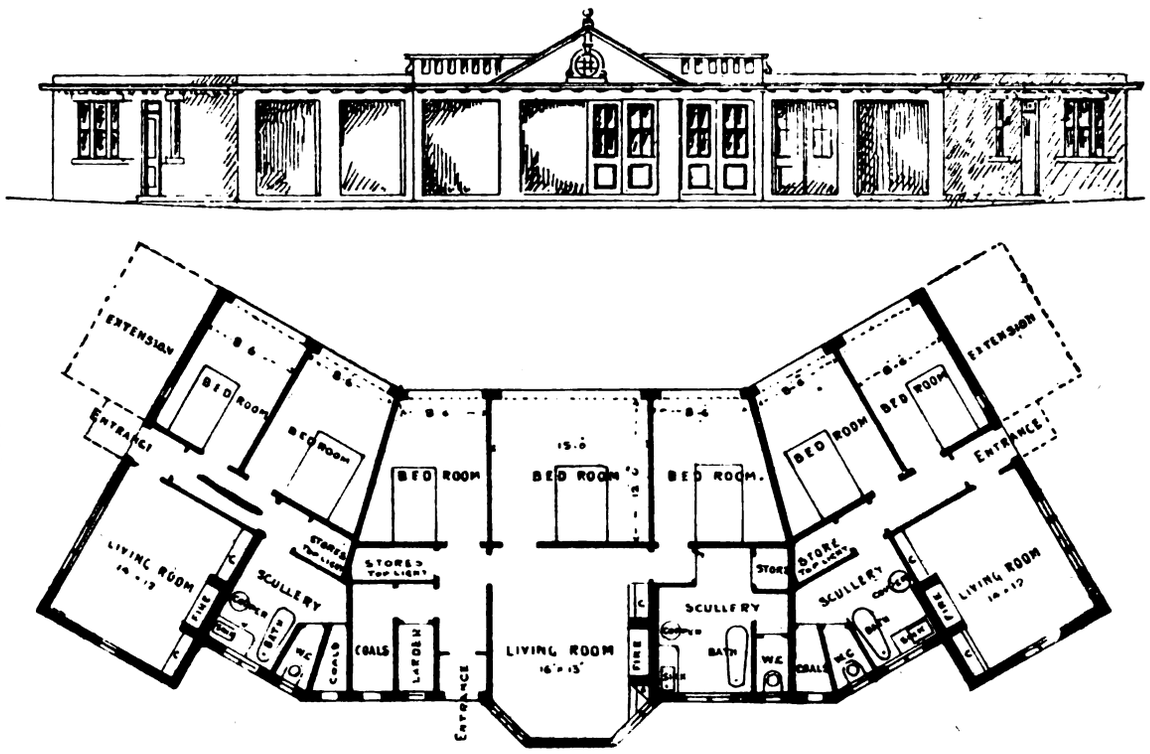
THE HOUSING OF CONSUMPTIVE FAMILIES.

It is, perhaps, unfair to suggest that sanatorium treatment of consumption has proved a failure, because Mr. Lloyd George's "magnificent palaces," in which the sick were to be brought back to health amid ideal surroundings, have not yet materialised; but it is definitely admitted that the treatment has not so far justified expectations, and it is certain that it acts very indirectly if at all as a preventative agent.

We suggested long ago, when the Insurance Act was passed, that the primary need was not the building of places in which to cure patients, but wholesome houses, in which open-air treatment might be given to predisposed consumptives; and in the course of the recent series of articles on "The Problem of the Perfect Dwelling," by Mr. Robert Thomson, it was incidentally shown how that might be accomplished. But it is hardly likely—even if we get the needed dwellings for the people, that we can turn them all into family sanatoria. What we certainly might do, however, is to adopt the excellent suggestion of Dr. Jas. T. Neech, the Medical Officer of Health for the borough of Halifax, for the carrying out of which Mr. James F. Walsh, architect, of 10, Harrison Road, Halifax, has made the necessary designs, which we reproduce by the courtesy of the Editor of the "British Journal of Tuberculosis," in which they have been published in a paper by Dr. Neech, with the permission of its author, and with some additional particulars kindly supplied by Mr. Walsh, the architect.

It has also been repeatedly shown that in congested urban areas the incidence of tuberculosis is greatest. In connection with this, however, Dr. Neech points out that in congested areas rents are usually cheaper, and the consumptive is often ailing for some time before he finally breaks down. If it be the breadwinner who is affected, income becomes reduced, and no doubt such families tend to gravitate to congested areas on account of cheaper rents, thereby adding to the number of centres of infection therein.

In ill-ventilated and badly lighted areas the tuberculosis material remains longer virulent, and is more likely to infect others, whereas in districts exposed to the beneficent influences of fresh air and with a plentiful supply of sunlight such as obtain at a sanatorium the tuberculous virus will sooner lose its potency and be less likely to be transferred to others.



BUNGALOWS FOR THE HOUSING OF CONSUMPTIVE AND PREDISPOSED TUBERCULOUS FAMILIES.

If open-air treatment is to be more effectual in the future than our experience has shown to be the case in the past such measures as are applied must be more of the nature of preventative agents. The susceptible cases—those persons who are predisposed to the disease—must be given open-air treatment before and not after they have developed the disease. Steps must be taken to build up their constitutions, and, as far as possible, counteract the tuberculous predisposition. They must be rendered less susceptible. At the same time they must be placed under such conditions as will be less likely to lead to infection of others. To carry out these ideas involves the submission of whole families in which there is a sufficiently marked predisposition to open-air treatment. It is apparent that it is impracticable to provide sanatoria for the reception and treatment of whole families.

Dr. Neech suggests that a suitable site, as well sheltered from the cold winds as possible, should be secured, and, if prac-

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ticable, within reasonable access of trams, so that those of the household who are fit can get to their work and the children reach their school. Upon this site should be erected cheaply constructed bungalows. The bungalows should be built in pairs, or, perhaps, in blocks of three, and each must be provided with a garden. The bungalows should vary in size and provide two-roomed, three-roomed, four-roomed, and five-roomed dwellings, so that small as well as fairly large families could be accommodated. The bedrooms should be of the pavilion and open-air type, and situated on the south side of the buildings.

The bungalows could be built of concrete or constructed with concrete slabs, and under normal conditions should be much less costly than ordinary dwellings. So soon as the best form of bungalow was decided upon it could be standardised to exact patterns, so that the buildings could be easily and quickly put together. This method would also cheapen their construction.

The scheme could be initiated on a small scale at first, and extended as and when desired. When a considerable extension became necessary and was accomplished, a resident nurse could be appointed to attend to any sick cases and see that open-air treatment was properly carried out. Special and suitable families should be selected for residence in the bungalows. The family should be one which is predisposed to the disease. One or more members thereof should have had sanatorium treatment. The family should undertake to properly carry out open-air treatment, because unless they would do this the benefit of the scheme would be lost. We can only help those who will help themselves. Additional bedding, and even food, could be provided in necessitous cases, especially if a resident nurse were in charge.

This scheme would not only remove consumptives from congested areas into more healthy surroundings, but would also give them the opportunity of a prolonged open-air treatment, and would enable the other members of the family who would be usually more or less predisposed to the disease to receive treatment before they became infected with the disease instead of afterwards, and thereby improve their health and render them less susceptible to infection, as well as reduce their chances of becoming infected through being placed in a more healthy environment.

Mr. J. F. Walsh, F.S.I., architect, Halifax, has prepared design and drawings from which the accompanying illustrations have been prepared. Mr. Walsh has made a special study of constructing buildings with concrete, and knows that these bungalows would lend themselves to that form of construction. Also that standardisation of the buildings could be readily adopted, so that extensions could be carried out on similar lines for two and three-roomed houses as well as the sizes shown in the illustrations.

SOME ADDITIONAL PARTICULARS.

The plan shows a block of three cottages, the central one having three bedrooms and the end ones two bedrooms each. The same plan might be varied by a third bedroom being added at each end, as indicated by the dotted lines, or built in blocks of four, with two houses in the central portion.

It is suggested that they should be constructed upon a concrete foundation, the surface of the bedroom floors being finished with jointless composition flooring of hardwood, sawdust and magnesite, and the junctions of floors and walls formed with a hollow. The floors of the living rooms to be finished with coloured concrete.

The external walls to be concrete cavity walls 9 ins. thick and the internal partitions of 2 in. thick concrete slabs.

The roofs might be pitched or flat of reinforced concrete waterproofed with metallic liquid with an inside cavity and the ceilings underdrawn with asbestos slabs or Beaver boards.

The whole of the internal walls to be finished with a smooth surface and limewashed or coloured and finished with Parian cement.

There would be no woodwork with the exception of the doors.

The opening parts of the windows to be steel casements and leaded lights.

An outside staircase might give access to the flat roof, which could be used in summer for full open-air treatment.

The cost would depend entirely upon local conditions and the facilities for obtaining suitable material for concrete, but there are few places in the West Riding where suitable material is not available and where the cost would not be 25 per cent. under that of stone or brick construction.

JOSEPH F. WALSH.
F.S.I., Licentiate R.I.B.A.
10, Harrison Road, Halifax.

HOUSING AND TOWN PLANNING IN THE MIDLANDS.

ADVISORY BODY DISAPPROVE GOVERNMENT TERMS.

Recently there have been set up all over the country by the National Housing and Town Planning Council a representative body of District Advisory Committees, for the purpose of focusing the opinion and action of local authorities on definite practical points in housing and town planning administration and more especially those points arising in regard to immediate post-war housing schemes. On the 23rd inst. the committee which represents the Midlands of England and Central Wales, assembled at the Council House, Birmingham, discussion centring chiefly on the conditions under which financial aid is to be given to local authorities for the purpose of carrying into effect approved housing schemes at the close of the war. The chairman of the conference was Councillor H. Shawcross (Rochdale), chairman of the National Council.

Before proceeding to business the delegates were welcomed by the Lord Mayor (Alderman Sir David Brooks). One of the chief subjects to which the conference would direct their attention, said his lordship, was that of the financial terms which had been offered by the Government in relation to housing schemes by local authorities after the war. It was quite obvious they would not get anything like a reasonable number of houses erected unless the builders, whether private or municipal, received some financial help. (Applause.) In the main, the Birmingham committee approved of the Government's proposals for subsidising the local authorities, on the basis that the Government should bear 75 per cent. of the deficiency and the local authority 25 per cent.; but they considered that the liability of local authorities should be limited to the produce of a penny rate, and that the Government should give a definite assurance to that effect. On broad principles it seemed fair that any deficiency that arose should be borne in reasonable proportions by the State on the one hand and the local authorities on the other.

CONFUSED TERMS.

The chairman said that at the last conference they had before them certain proposals for financial assistance which were on very much better lines than the present Government ones. The idea had been that there should be a block grant, and that local authorities should then be free from interference on the part of the Local Government Board, and would be able to run their schemes as they liked. That scheme had been foreshadowed by Mr. Hayes Fisher at Manchester. But now they found it was not to be so, and that the terms must involve a charge upon the rates. The greatest objection to that was not on the part of the authorities who did not want to do anything, but came from those progressive authorities who were eager to see the question tackled and many houses built. They knew that, if it were a question of putting the houses on the rates, instead of getting the maximum they would get the minimum number. When it meant that every house built would be an additional charge on the rates they would get very few built. They should endeavour to get the terms amended, so that the charge upon the rates would be a temporary one, if possible. Seeing that the measure was a war one, temporary assistance was all that should be required from local authorities, so that when things became normal they would be able to run their housing schemes on an economic basis. The terms were at present extremely confused and misleading. The most distasteful things to local authorities were the great difficulty in estimating what the deficiency was going to be and the question of the valuation at the end of a period. They would be entirely at the mercy of a valuer, and they would have no idea what extra liability they might have at the end of the period in question through this valuation.

The first resolution, which was agreed to without discussion, expressed dissatisfaction with the Government terms, but recommended local authorities not to dissent from the general proposal that there should be a partnership between the State and the local authorities, the terms of such partnership being that a proportion of the loss shall be borne by local authorities.

APPEAL FOR MODIFICATIONS.

Mr. H. R. Aldridge, secretary of the National Council, introduced a resolution appealing for modifications in the terms which would ensure that grants in aid of deficits on schemes would be made on the actual deficits, and that the loss to be borne by local authorities on all schemes carried out in any one administrative area should not exceed the proceeds of a penny rate. He said that if authorities put a penny on the rates it was only right that the Government should bear the burden over and above that. They were asking the ratepayers a great deal—to accept a principle which in normal times they would never dream of accepting. But, in view of the great consideration of national need, they asked the ratepayers to agree.

Alderman Yerbury (Leicester) contended that the houses should be self-supporting. They should receive sufficient money to be able to pay an economic rent. There was no doubt that men who occupied the proposed houses would be twitted by the neighbours as being paupers.

Mr. Aldridge said the best way to meet that would be to give the tenancy of the houses to men who had served their country at the front.

The resolution was carried, as was another asking the Local Government Board to give an undertaking asking that valuations should be made on the annual value of the houses based on the rental.

Other resolutions agreed to substituted three for two years as the full period within which a scheme shall be carried into effect; advised the Government to lend or grant money only in connection with schemes which had been prepared on proper town-planning lines; and urged the passing of emergency legislation empowering local authorities to acquire land for housing at reasonable prices, and with such expedition that there would be no delay in preparing housing schemes to be carried into effect at the close of the war.

In the election of the Executive Committee, the following towns secured representation: Birmingham, Coventry, Wolverhampton, Leicester, Shrewsbury, Stafford, Burton, Warwick, and Walsall. Rural districts: Cannock, Evesham, Atcham. Urban districts: Kettering, Cannock, Oldbury, Wellington, Coalville, Kenilworth, and Belper.

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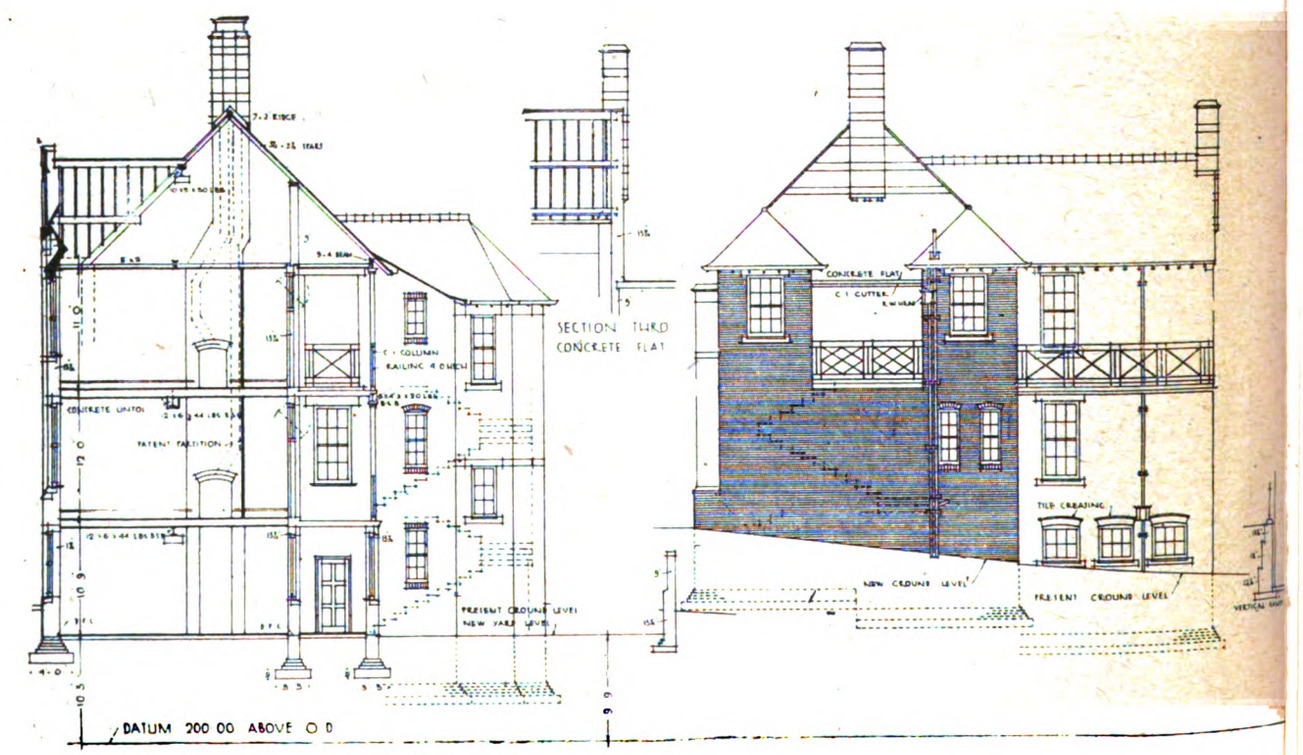
CITY OF SHEFFIELD · HEALTH COMMITTEE ·

PROPOSED TUBERCULOSIS DISPENSARY · · · SI

SOUTH ELEVATION



SECTION · A·B ·

· EAST ELEVATION ·

SCALE OF

TUBERCULOSIS DISPENSARY, SIMS · STREET,

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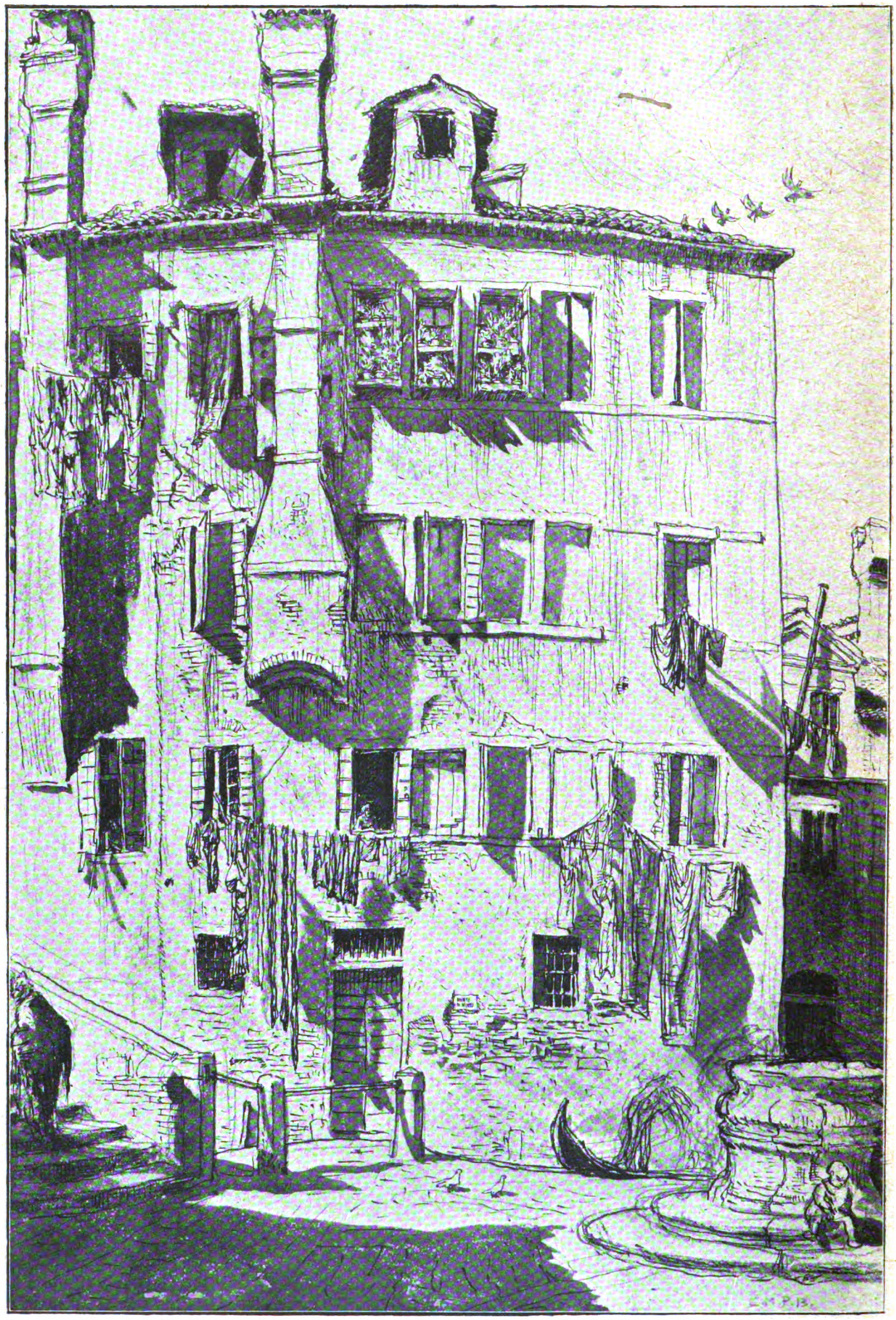

TYPICAL VENETIAN HOUSES NEAR THE PALACE OF THE CAMPANILE.
From a Water Colour Sketch by Mr. C. Maresco Pearce.

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Bedford Lemere, Photo.]

THE UNITED UNIVERSITIES CLUB, SUFFOLK STREET, PALL MALL EAST, S.W.
DETAIL OF ENTRANCE FRONT.
Mr. REGINALD BLOMFIELD, R.A., Architect.

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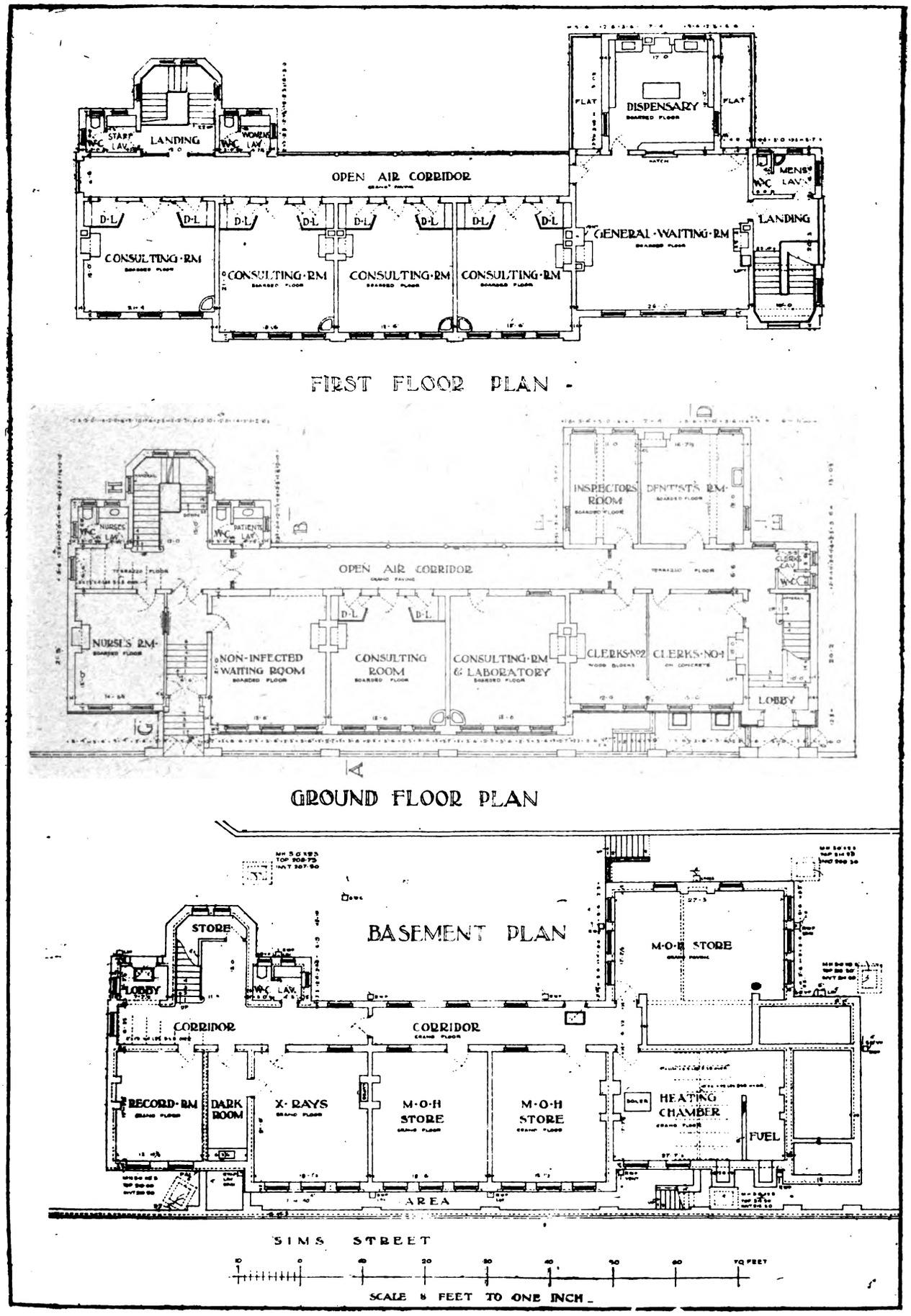

TUBERCULOSIS DISPENSARY, SHEFFIELD.

Mr. F. E. P. Edwards, F.R.I.B.A., City Architect.

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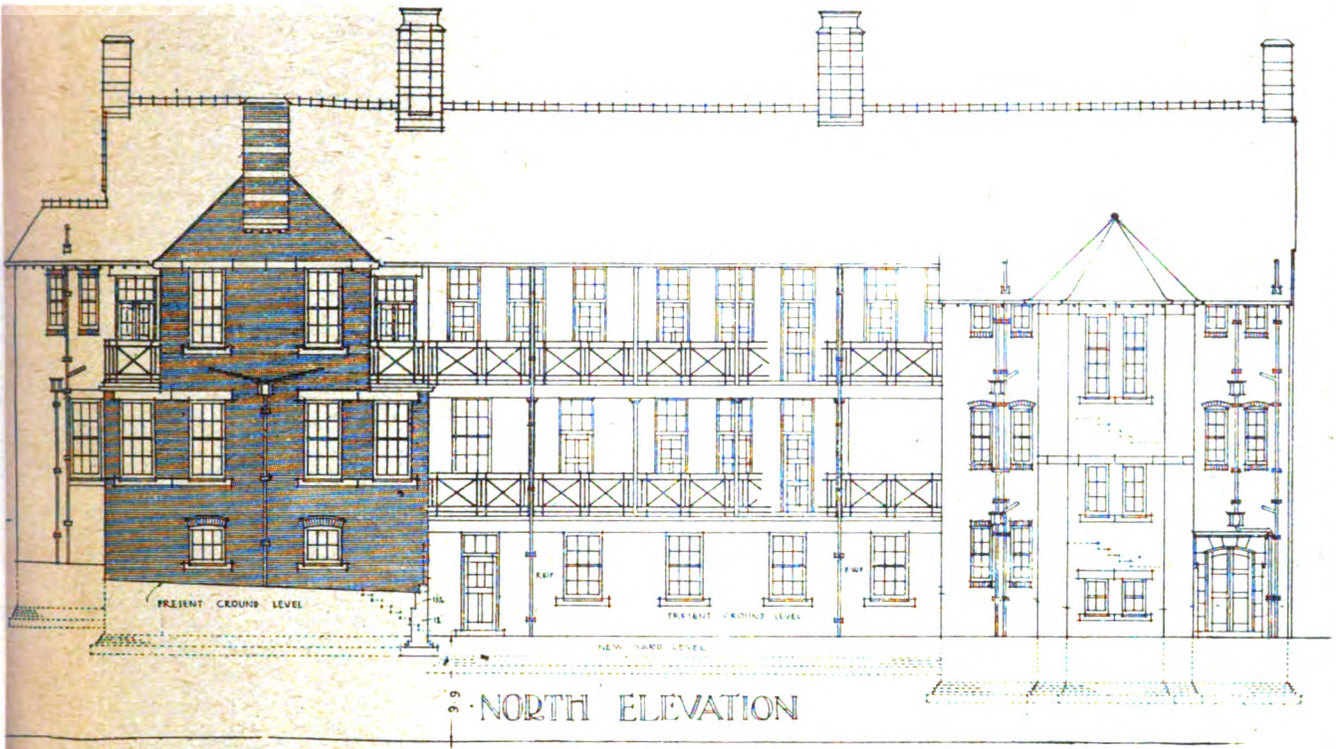
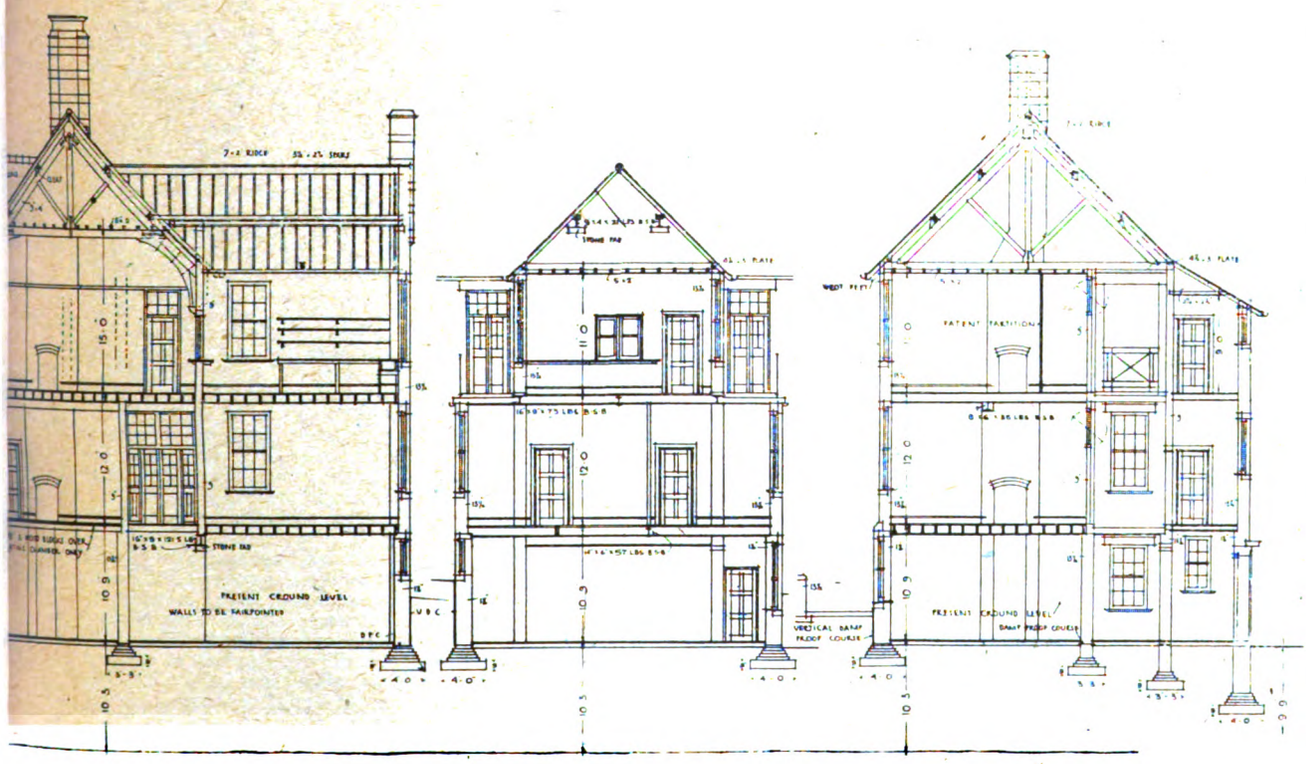


NORTH ELEVATION



SECTION C D

SECTION E F

SECTION C H

10 30 40 50 60 70 80 FEET

FIELD.—Mr. F. E. P. EDWARDS, F.R.I.B.A., City Architect.

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Our Illustrations.

UNITED UNIVERSITIES CLUB.

Last week we gave a view of this clubhouse from a photograph now at the Royal Academy Exhibition, and we printed a brief description of the work. To-day a second photograph, also at the Academy, is reproduced in further illustration of the same premises.

TYPICAL VENETIAN HOUSES NEAR THE PALACE OF THE CAMPANILE.

These houses, so quaint and simple in their detail, are quite ordinary tenements of the usual type seen in the poorer quarters of Venice. They may probably be taken as representing much the same character of architecture as the class of dwellings demolished by the Germans during their eight hour bombardment by aircraft over the city prior to the great Italian offensive so successfully launched against the Austrians just lately. This particular block of buildings, shown by Mr. C. Maresco Pearce's spirited monochrome sketch, is situated very close to the palace of the Campanile. We published the same artist's drawing of that picturesque pile in our issue of March 27 last. Both these pictures were shown in the Suffolk Street Galleries, Pall Mall, earlier in the present season.

TUBERCULOSIS DISPENSARY: SHEFFIELD.

This building for the Health Committee of the Sheffield City Council is intended to provide for the accommodation of the medical staff and treatment of tuberculosis, which at present is being undertaken in temporary premises. The site is in the centre of the city, and the dispensary is intended to be adjacent to other buildings for the medical services of the Corporation and Education Committee. The building has been planned so as to secure the maximum amount of natural ventilation to all parts, and contains on the ground floor rooms for clerical staff, inspectors, nurses, and dentist and non-infectious consulting and waiting rooms. The first floor provides general waiting-room for patients, with dispensary adjoining, and range of four consulting rooms, with dressing lobbies attached, approached from open-air balcony. Space is provided in the basement for stores and records, X-rays and photographic dark room, plaster-cast room, and heating apparatus. The scheme, which was designed by the city architect, Mr. F. E. P. Edwards, F.R.I.B.A., F.R.San.I., provides for future extension, the estimated cost of the first portion being £5,200. The erection of the building is deferred until after the war.

Gregory Vigeant, one of Chicago's earliest and best known architects, has died after a long illness at the age of sixty-five. His chief work was done in the designing of churches. His two older sons are members of the architectural firm of Labbenbaum, Marx, and Vigeant.

Smith, Hinchman, and Grylls, architects, Detroit, Mich., have devised a novel plan to encourage their employees to subscribe to patriotic funds. They have arranged to permit the donors in their employ to earn the amounts of their subscriptions by overtime work throughout the year.

Ernest W. Bowditch, a well-known American landscape architect, died at his home in Milton, Mass., on May 27. He was sixty-nine years old. Mr. Bowditch had been prominently identified with his art for many years, and was among that small but distinguished group of men who have elevated landscape architecture to its present high plane.

Repin, a well-known Russian painter of the old school, has died of starvation at Kuokkala, on the frontier of Finland. He was born nearly eighty years ago, in a little Russian village, of humble parents. Like many of his countrymen, Repin welcomed the Revolution. A few months later he was to paint the portrait of Sir George Buchanan, but the political developments of the moment rendered it difficult for him to do so. He continued to work in his studio almost up to the last.

THE RELATIVE EFFECTIVENESS OF VARIOUS TYPES OF ROOF CONSTRUCTION IN PREVENTING CONDENSATION ON THE UNDER SURFACE.

Experiments to determine the relative effectiveness of various types of modern roof construction in preventing the formation of condensation upon their under surface have been made in the testing laboratory of F. P. Sheldon and Son, architects and engineers, of Providence, R.I., conducted by Mr. W. S. Brown, Mem.Am.Soc.M.E., under the direction of Mr. Arthur N. Sheldon, Mem.Am.Soc.M.E. The results of these investigations were presented before the 102nd meeting of the National Association of Cotton Manufacturers held at Boston, April 5, 1917. Since the presentation of these data the results of further experiments on roof constructions numbered 13, 14, and 15 have been added under date of August 31, 1917.

The matter of condensation on the under surface of roofs is one of great importance to textile manufacturers, as there is involved the damage to the product and machinery by dripping water, and, in the case of wood construction, the deterioration of the building itself. The subject is also one of interest to the owner of heated buildings used for almost any purpose, and the facts established by these tests will materially aid in the selection of the type of construction to be used. The matter of decay in wooden buildings subjected to constant high relative humidity has attracted much attention during the past few years, and considerably as a result of the reports and suggestions of Mr. Fred J. Hoxie, Mem.Am.Soc.M.E., and also engineer and special inspector for the Associated Factory Mutual Fire Insurance Companies.

The apparatus used consisted of a heavily insulated box with outside dimensions of 4 ft. 9½ in. × 4 ft. 6½ in. × 1 ft. 8 in. deep, with one face constructed to receive the roof specimen, the exposed area of which was 3 ft. × 4 ft. 2½ in. in each case. For observing condensation on the under-side of the sample roof a window 10 in. × 12 in. was provided in the opposite face of the box, and in order to prevent condensation on the glass itself (which would make accurate observations impossible) provision was made for inserting several panes of glass with ½-in. air spaces separating them. In the case of roof number 12 six panes were found necessary, together with a cork board slide covering the window. The inside surface of each sample tested was painted white in conformity with the usual mill ceilings.

A steam jet supplied the necessary humidity to the interior of the box, and the relative humidity was measured by a hygrometer hung entirely within the box. This hygrometer was previously calibrated in position by means of an electro-psychrometer.

The heat was supplied by an electrical heater consisting of six sets of nickel-steel resistance wires controlled by an external switchboard. The sets were arranged for control in three groups of two each, each group having different capacity to dissipate electrical energy. The switching arrangement was so designed that any of the coils could be connected in multiple, and by means of triple-pole switches any two sets forming one group could be connected in series; a total capacity of 3 kw. being obtainable in successive steps of ½ kw. each.

The air temperatures inside the box were observed by means of nine accurate chemical thermometers so placed as to obtain a fair average. A wall thermometer for measuring room temperature was hung back of the fan described below. The room temperature was kept constant by means of a thermostatically controlled steam radiator.

A 12-in. fan was located externally and used to provide a positive circulation of air over the outside surface of the sample roof and thereby to maintain constant conditions in this respect throughout the entire series of tests. The fan directed the air against the roof surface at an angle of 30 deg., and with a velocity of approximately seven miles per hour.

Each sample of roof was tested under three different conditions of heat-head (temperature difference between outside and inside air) to obtain results corresponding to outside temperatures of about 20 deg., 0 deg., and minus 20 deg., Fahr., for a given inside temperature of 70 deg., Fahr., in each case. All the tests were started after readings of the various thermometers indicated that thermal conditions had become constant. Steam was then very slowly admitted to the box, resulting in an increase of the relative humidity as noted by the rise in the wet bulb. Compensation for the heat added by the admission of steam to the box was made by adjusting the amount of heat supplied through the electric heater, so that the dry-bulb temperature during any test remained practically constant.

Formation of condensation on the under side of the roof was noted, which occurred when the dew point of the air within the box increased and became equal to or higher than the temperature of the surface in question.

These tests were made on concrete (1 : 2 : 4 mix), gypsum composition containing wood shavings used as a binder and having steel reinforcement and planks. Some of these roofs were insulated in various ways, and all, except one, covered with a 5-ply composition roof. In the diagram a curve was platted on the three points obtained, as noted previously, the relative humidities being used as abscissæ and heat-heads or temperature difference as ordinates. Since these tests are all based on an interior temperature of 70 deg., Fahr., the corresponding outside temperatures are also, for convenience, shown as ordinates.

Each full line curve represents the particular type of construction noted in the key, and from it may be read directly the relative humidities at which, for any given temperature, these tests show that condensation will occur.

For instance, given an inside temperature of 70 deg. and an outside temperature of 0 deg., curve number 8 shows that condensation on the under side of a 2⅜ in. plank roof begins at 66 per cent. relative humidity.

It will also be noted that all curves are prolonged through a common origin, which is a theoretical point based on 0 deg. heat-head. Under these conditions the temperature of the air on both sides of the roof is the same and condensation will not occur until 100 per cent. relative humidity is reached.

Starting from this point, two interesting theoretical curves are drawn, as indicated by the dotted lines. They constitute the limiting curves between which all materials whatsoever, from the most perfect conductor of heat to the most perfect insulator, must fall. That curve, which is a vertical line at the extreme right, is the line of the perfect insulator. It is purely theoretical and illustrates that if it were possible to obtain such an insulator, 100 per cent. relative humidity could be carried with any temperature difference, because there would be no flow of heat and consequently no temperature gradient within the material. That is, the surfaces would be of exactly the same tempertaure as the air with which they are in contact.

The second curve at the extreme left is designated the "dew point curve," and represents the depression of the dew point (based on a dry bulb temperature of 70 deg., Fahr.), for the various relative humidities from 3 to 100 per cent. This curve is also purely theoretical and illustrates that the poorest insulator will carry somewhat greater relative humidities than those indicated.

It should be noted that all these curves have reference to the particular relative humidity at which condensation will take place on the *under side* of the roof. With reference to wood roofs, there is another important consideration which must be taken into account; namely, the cracks between the planks afford a more or less direct channel by which the moist air in the room below may reach the under side of the roofing paper. Since the standard 5 or 6-ply composition roof is a poor insulator of heat, the temperature of its under surface is consequently but slightly warmer than that of its top surface. This results in a chilling of the air which comes in contact with it and the formation of condensation if the cooling is carried on beyond the dew point.

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In buildings where artificial humidification is resorted to, or where the humidity is naturally high, the result is that the first ply of roofing paper on the average roof of this type in this climate is *wet* during the greater part of the heating season. In a new building moisture may not become evident until some time after erection, due to the hygroscopic property of the roof plank, the wood itself absorbing the condensation if the deposition of the latter is not too rapid. On a roof having wide cracks, condensation is certain to come sooner or later if the warm, humid air of the room comes in contact with the roofing paper, and for this reason the top surface of the plank may be seeped with moisture, regardless of whether or not any condensation is present on the under surface. This condition was established in laboratory experiments and has been found in buildings by those who have removed old roofs.

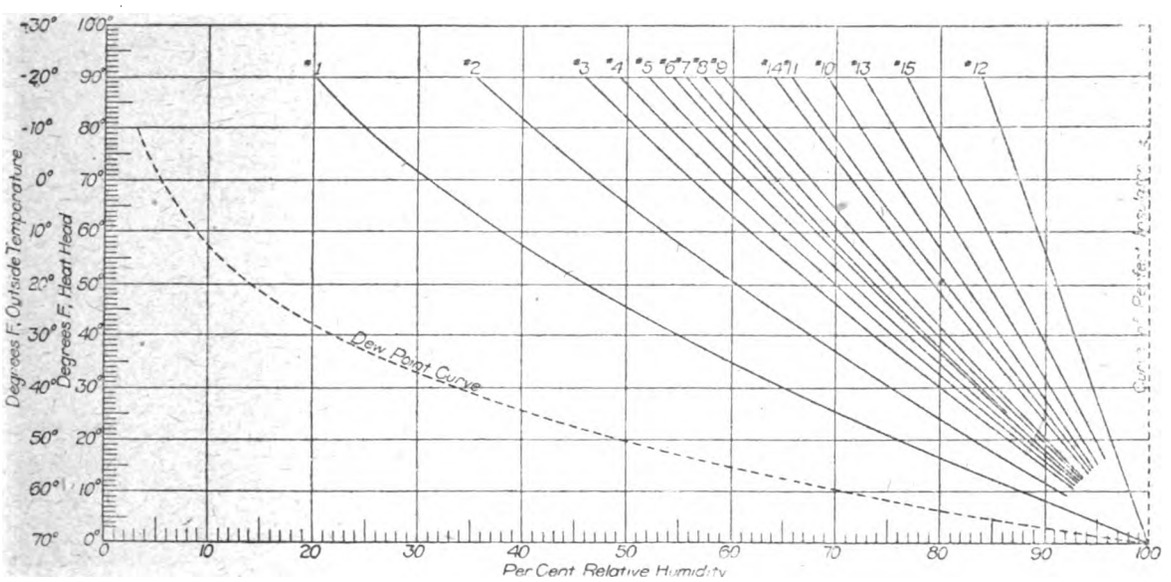
Again, if the cracks between the planks are so wide as to allow a moderately free circulation of air, condensation often accumulates so rapidly as to run down the edges of the plank to the room below, manifesting itself in a line of drops at the cracks between the plank.

If the temperature of the under side of the roof plank coincides with or is lower than the dew point corresponding to the particular humidity and temperature existing, there will be condensation upon this surface and throughout the thickness of the roof, that is, in the cracks between the plank up to the underside of the roofing paper.

On the other hand, if the temperature of the under side of the roof plank is above the dew point, no condensation will be deposited here, but it may occur from the under side of the roofing paper down to a point somewhere within the interior of the roof, depending upon the heat gradient and the relative humidity. Without doubt the presence of this moisture, due to the second cause, that is, within the roof, is a most active agency in providing the proper conditions for the development and rapid growth of fungi and its attendant decay throughout the roof. In short, the prevention of condensation on the under side of roof plank, while eliminating a nuisance, may not appreciably lessen the possibilities in the roof for decay.

Really, then, in its last analysis, the successful solution of the problem of the design of wood roofs seems to resolve itself into two requirements. The roof should be made thick enough, according to the accompanying curves, to prevent the occurrence of condensation upon its under surface, and it should be protected against decay by proper preservative treatment, or by the use of a variety or grade of wood of inherently strong rot-resisting qualities.

The conditions just described occur in buildings where the occupancy requires warmth and high relative humidity, such as in textile mills, conditioning rooms, tobacco factories, bleacheries and dyehouses. In ordinary storage and manufacturing buildings a sufficient relative humidity to cause any decay in the roof plank does not generally exist. And while such conditions may, owing to weather conditions, occasionally occur, their duration is so short that the damage done should be negligible.



GRAPHS SHOWING THE RELATIVE HUMIDITY WHICH MAY BE CARRIED UNDER VARIOUS TYPES OF ROOFS WITHOUT CONDENSATION UPON THEIR UNDER SURFACE.*

KEY:—

Roof number 1. 4″ concrete slab, bare. 1:2:4.
Roof number 2. 4″ concrete slab plus 5 ply roof.
Roof number 3. 1½″ t and g spruce plank plus 5 ply roof.
Roof number 4. 4″ concrete slab plus ½″ spruce plank plus 5 ply roof.
Roof number 5. 4″ concrete slab plus "Keystone" hair insulator plus 5 ply roof.
Roof number 6. 4″ concrete slab plus 2″ hollow gypsum furring plus 5 ply roof.
Roof number 7. 4″ concrete slab plus two thicknesses ½″ spruce plus 5 ply roof.
Roof number 8. 2½″ t and g spruce plank plus 5 ply roof.
Roof number 9. 4″ concrete slab plus ½″ air space plus ½″ spruce plus 5 ply roof.
Roof number 10. 4″ concrete slab plus 1″ corkboard plus 5 ply roof.
Roof number 11. 3½″ spruce plank splined plus 5 ply roof.
Roof number 12. 4″ concrete slab plus two thicknesses 1″ corkboard plus 5 ply roof.
Roof number 13. 4″ "Gypsum composition" (wood compound) plus 5 ply roof.
Roof number 14. 4″ concrete slab plus one thickness 1″ felted flax fibre plus 5 ply roof.
Roof number 15. 4″ concrete slab plus two thicknesses 1″ felted flax fibre plus 5 ply roof.

*Note:—All curves are based upon 70 degrees Fahr. dry bulb temperature. For any other appreciably different dry bulb temperature, a correction should be made to the relative humidity found by these curves.

TREATMENT OF SEWAGE.

ITS USE AS A FERTILISER.

A meeting of the Association of Managers of Sewage Disposal Works was held at the Town Hall, West Bromwich, last week, when, after thanking the association for electing him to the presidential chair, Mr. J. Edward Willcox, M.Inst.C.E., pointed out in his address that owing to war restrictions little constructional work had been carried out in connection with sewage disposal works, except for camps and munition works.

He described the effect of these war restrictions on the question of sewage treatment, and gave details of the progress which had been made recently both in this country and in America, as well as the methods which had been adopted for the training camps of the English and American Armies, and the advantage and economy which would be effected by standardisation. One lesson of the war, he said, was the necessity of increasing our home production of food and the need of utilising sewage and sewage sludge as a fertiliser, and he indicated the means by which this could be accomplished, and the fundamental importance and value of nitrogenous fertilisers.

Mr. Willcox then mentioned the principles involved in the correct design of purification works, and the matters on which there was still much scope for research and investigation.

Reference was made to recent experiments in connection with new forms of tanks and deep filters, and the work which had been done both in England and America with the activated sludge process, the speaker describing at some length this new system and the many practical problems relating to it as affecting design and cost.

After dealing with the effect which the establishment of new industries and large building developments would have on the question of sewage disposal, and the desirability of affording further facilities for trade wastes, he referred to the necessity for State testing stations, where sewage problems could be investigated by a competent and independent authority.

He concluded by pointing out the great importance of skilled management, having regard to the intensive methods of disposal which were now being adopted.

Papers were read by Mr. A. D. Greatorex (borough surveyor) on "West Bromwich Sewage Works," and Mr. A. V. Reynolds, of Stoke, on "The Treatment of Sewage on Land," and a discussion followed.

Owing to the great increase in the cost of repairing and decorating cottage property, and the fact that owners cannot put any of this cost on the rent, representation has been made to the Bolton Assessment Committee with a view to a revaluation of cottage property, and the clerk has been instructed to carry out a revision and revaluation forthwith.

Among the friends of Mr. Sheriff-Elect Banister Fletcher, C.C., F.R.I.B.A., a movement is on foot for the presentation to him of his chain and badge of office. Dr. Edwin Freshfield is the chairman of the Committee, Alderman Sir John Baddeley the vice-chairman, Mr. Deputy W. Hayward Pitman, J.P., the treasurer, and Mr. A. Charles Knight, C.C., the secretary.

The Local Government Committee of the L.C.C. states that it has arranged for the removal and storage at the new County Hall of the figure on the top of Shaftesbury Memorial Fountain, but has decided to take no further action to protect the fountain against damage during air raids. The Committee will take no action to protect Cleopatra's Needle against air-raid damage.

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COMPETITIONS.

SAN FRANCISCO.—Eight architects successful in the first stage of competition for the Supreme Court and Library building and State office building for Sacramento Capitol extension are as follows: William Hewitt, Percy Ash and N. C. Curtis, associated, New York; James Gamble Rogers, New York; Dennison and Hirons, New York; Tracy and Swartwout, New York; Adolph Scherrer, Indianapolis; Weeks and Day, Bliss and Faville and Ward and Blohme, San Francisco. The plans to be submitted in second stage to be in by September 15, 1918, for final decision. Architects receiving first choice in final stage will receive commissions; others to receive 2,500 dollars each. Jury included Governor William D. Stephens, Supreme Court Justice F. M. Angellotti, Marshall Demotte, chairman of State Board of Control; Wm. Mitchell Kendall, Henry Bacon, Sylvain Schnaittacher. George B. McDougall, State Architect, acted in capacity of adviser. Amount available for construction, 2,500,000 dollars. Work will not be commenced until after conclusion of war.

OBITUARY.

The sudden death of Frank Miles Day, under an attack of apoplexy, has removed from the profession of architecture in America one of its most distinguished members and ended a career of singular usefulness.

Receiving his preparatory education at the Rittenhouse Academy in Philadelphia, he studied architecture at the University of Pennsylvania, graduating as valedictorian of his class in 1883. For the next three years he continued his professional preparation through travel in England, France and Italy, and study at the Royal Academy and South Kensington Museum, and in the office of Basil Champneys, London. In 1888 he began the practice of architecture in Philadelphia, being for a time associated with his brother, H. Kent Day, and of late years with Charles Z. Klauder. Among the more notable of his works in Philadelphia are Horticultural Hall, the Art Club and the Crozer Building, the Museum at the University of Pennsylvania, done in collaboration with Messrs. Cope and Stewardson and Wilson Eyre; the gymnasium of the University of Pennsylvania, the amphitheatre of the Medico-Chirurgical Hospital, and a number of churches and private residences. A series of noteworthy college buildings in other cities have come from the hand of his firm; buildings for Wellesley, Yale, Cornell and elsewhere, and particularly for Princeton, whose Holder Hall and University Dining Halls have been called by Ralph Adams Cram "one of the most distinguished architectural creations in America." Apart from his position in the American Institute of Architects, Mr. Day was a director of the American Academy in Rome, an Honorary Member of the Royal Institute of British Architects, Corresponding Member of the Imperial Society of Russian Architects, Associate of the National Academy of Design and member of the American Philosophical Society and the National Institute of Arts and Letters. He also held membership in the University Club, Philadelphia, the Yale Club and Century Association, New York. Scholastic recognition was given to Mr. Day in his baccalaureate degree from the University of Pennsylvania upon graduation in 1883, through the degree of Master of Arts, *honoris causa*, granted in 1916 by Yale University, and in 1918 by the honorary degree of Doctor of Science in Architecture, conferred by the University of Pennsylvania. This act, effected and made known to him before his death, was consummated at the commencement ceremonies four days thereafter, when the diploma and hood were delivered to a friend for presentation to his family, in token of the honour in which he was held by his Alma Mater.

Miss Evelyn Barlow, sister of Sir Montague Barlow, M.P., senior partner of Sotheby, Wilkinson, and Hodge, has joined Sotheby's, Auctioneers, and conducted her first sale there on Tuesday week. A woman auctioneer now conducts business weekly at the Mansfield cattle market.

PARLIAMENTARY NOTES.

JOHN BURNS ON "ROBBING THE POOR BY MEANS OF DISPROPORTIONATELY HIGH GAS BILLS."—On Wednesday last, on the Order for the consideration of the Statutory Undertakings (Temporary Increase of Charges) Bill, in the House of Commons, according to the *Times* report, Mr. Denman (Carlisle, L.) proposed, and Mr. Anderson (Attercliffe, Sheffield, Lab.) seconded, an amendment to omit the decision come to in Committee enabling a dividend to be paid by gas companies at three-quarters the statutory or maximum rate of dividend, or of the pre-war dividend, whichever was the lower, and revert to the original proposal of the Bill that the amount allowed should be one-half. After debate the House divided, and by 141 votes to 97—majority 44—rejected the amendment.—On the motion for the third reading, Colonel Wedgwood complained of the "whipping" and pressure that had been brought to bear by the vested interests concerned. He thought it was monstrous that because concerns found they were losing money they should be able to get a vote of the House of Commons which placed thousands of pounds into their pockets. By its action on this Bill the House had sent up the price of gas shares on the Stock Exchange. [Mr. Burns (Battersea, L.): Gas shares have risen this morning.] They had put money into the pockets of the shareholders at the expense of the silent mass of the community. This sort of speculation by the House of Commons vote was deplorable. The next body of manufacturers who came along would demand a larger slice, and the taxpayers and consumers of the country would be fleeced more and more by the vested interests which exercised undue pressure upon members of the House of Commons.—In the course of further debate, Mr. Farrell (Longford, N., Nat.) complained that a London syndicate had acquired a number of gas undertakings in Ireland, and after having raised the price of gas to 6s. per 1,000 cubic feet, the limit to which it had been possible for them to go, had given notice six weeks ago, in the expectation that this Bill would be passed, that they would increase the price to 10s. He moved: "That the Bill be read a third time this day three months."

MR. BURNS'S LANGUAGE.

Mr. Burns (Battersea, L.) seconded the motion. He said that the attitude towards the Bill of Mr. J. W. Wilson and Sir F. Banbury reflected great credit on two of the most useful and capable members of the House. The implication of some of those who had spoken was that members who opposed the Bill were Bolshevists who wanted to rob property of its rights and privileges of its purposes. The only Bolshevists who were in the House were the financial Bolshevists who, with disorderly intent and revolutionary and confiscatory measures, robbed other people. But they did it decently and in order. They turned on a Minister, a business man, and this was the first instance they had had of financial panoplied Bolshevism responding to the Government whips at the instance of vested interests. It would be the poor people who would suffer in cold and inconvenience when the winter came. The programme of the hon. member for Berwickshire (Mr. Tennant) seemed to be mailclad Imperialism abroad with ironclad plutocracy at home. The *Financial News*, in an article that morning, had stated that gas shares had gone up, and the *Times*, which some people regarded as a pillar of honest financial journalism, said: "We hardly think that the Board of Trade played a very brave part in leaving it to the House of Commons to decide." If the London County Council were to raise the rates by a farthing in the pound for trams over Westminster Bridge, or for a new park at Bermondsey or Deptford, the Yellow Press, led by the *Times*, would cry out against it. Now hon. members must agree with his definition which he gave in the House some years ago that the Yellow Press, led by the *Daily Mail* and the *Evening News* and papers of that type, was owned by blackguards, edited by ruffians, and read by fools. (Laughter.)—The Speaker: I do not know to whom the right hon. gentleman is referring. If he is referring to a noble lord in another place—(Mr. Burns: "On the contrary.")—to whom is the right hon. gentleman referring?—Mr. Burns said he was quoting a statement which he made in the House some years ago, that the Yellow Press was owned by blackguards, edited by ruffians, and read by fools. If the Speaker said that was unparliamentary and out of order he would withdraw it.—The Speaker: It most certainly is unparliamentary. The leading English paper to which the right hon. gentleman referred—the *Times*—is owned by a member of the other House. To refer to a member of the other House as a blackguard is an expression which is not permitted here, and it certainly would not be permitted in the other House.—Mr. Pringle: Is it not the fact that the paper to which the right hon. gentleman referred is owned by a company?—The Speaker: I do not know, I am sure. I have always understood that Lord Northcliffe was the owner of the *Times*. (Hon. Members: "No.") Then it makes it worse, because it is other gentlemen he refers to as well. There can be absolutely no justification to use that phraseology about anybody, whether he is a member of the other House or is not. I call upon the right hon. gentleman to withdraw.—Mr. Burns: I mentioned no member of the other House.—The Speaker: I say the right hon. gentleman has no business to refer to the owner or owners of a newspaper as being blackguards. That is the point.—Mr. Burns: I mentioned no member of Parliment—no member of the House of Lords. (Hon. Members: "Withdraw.") I shall obey the Speaker, and no one else. I have been twenty-six years a member of the House, and never come into conflict with the Chair, and I do not intend to do so now. I do my best to comply with the rules. But if you say I ought to withdraw, when I did not mention the name of a member of Parliament or a member of the House of Lords, I of course respect your decision, and I will withdraw, but I mentioned no peer and no commoner.—The Speaker: I do most earnestly say that for the right hon. gentleman of all people to get up in this House and name certain newspapers and then to say they are owned by blackguards, edited by ruffians, and read by fools, I think is utterly disorderly, unparliamentary, most unprovoked — (Hon. Members: "No," and "Hear, hear.")—and I am astonished that the right hon. gentleman, with his great experience of the House, should have permitted himself to use such expressions.—Mr. Burns: I was under the impression that the rules of this House allowed a member a freedom of speech that so long as he did not make a personal reflection on any member either of the public or of this or another House he was entitled to choose his own language in so doing. I was repeating a statement which I made when you yourself were in the Chair, and I thought I was entitled, having made it then, to repeat it now. But if we are to have another standard and have during the war——The Speaker: The right hon. gentleman is contesting my ruling and will not accept my statement. I have pointed out that I think those expressions are very improper. I cannot say at this time whether they were used before—I should like to have the reference—but I do suggest to him he should withdraw those expressions. He of all persons would object to being designated in those terms, and I am sure he would not wish to apply to others terms by which he would not like to be designated himself. (Hear, hear.)—Mr. Burns: I am too old a Parliamentary hand to damage my position in this House and the cause I represent by quarrelling or disagreeing with the Chair. I accept your advice, Mr. Speaker. (Hon. Members: "Withdraw.") I do so. (Hon. Members: "Say so.") I have said so. (Hon. Members: "Withdraw.") I withdraw, Mr. Speaker. That is what I meant by saying I accepted your advice. Continuing, Mr. Burns said he did not despair of seeing some member of the House of Lords, when the Bill went to another place, taking the view that it was not the business of the rich in face of a debt of 8,000 millions to give an example of stampeding the Ministry and robbing the poor by means of disproportionately high gas bills. As to the position taken up by the Government, the *Times* was right in saying that it was not the kind of thing which evoked admiration either for Ministers or the Government.—The amendment was negatived, and the Bill was read a third time.

The erection of a new Wesleyan church at Biddulph is contemplated.

The work of excavating the ancient sites of Cyrenaica is going on steadily. Among recent discoveries are two interesting statues—one the figure of a matron of the second century B.C., and the other a Winged Victory. Another important find is a temple containing a colossal statue of Demeter with various inscriptions of the third century B.C.

Lord Lambourne presided at a meeting at the Great Eastern Hotel, convened to consider commemorating old Chigwellians who have fallen in the war. In the absence of the headmaster, Canon Swallow moved that the memorial should take the form of a new chapel. The proposal was adopted unanimously, and a representative committee was formed, of which Mr. E. J. Wythes, at the school, Chigwell, is the treasurer.

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Correspondence.

THE DUKE OF DEVONSHIRE AND THE PROPOSED CHISWICK GARDEN CITY.

To the Editor of THE BUILDING NEWS.

Sir.—My attention has been called to a statement which appeared in THE BUILDING NEWS of July 17, 1918, that "the Duke of Devonshire has, through Lord Hartington, assured the Committee of Residents that he would rather sell the land to the council for a garden city project than for the gas company's factories." I should be grateful if you would give publicity to the fact that the only assurance given by me (not on behalf of my father) was a personal one, that I had no doubt that my father would prefer to see a garden city built on the Duke's Meadows than a gasworks, and that I was sure that he would sympathetically consider any proposal for a garden city that might be brought forward. This assurance was qualified by the statements that he had not felt justified in taking any side on an issue which was at that time one between two public bodies and about to be decided by Parliament, and that his attorneys were by no means sure that his object, which was that the land should be developed for the benefit of the greatest number rather than for the benefit of the few, would best be served by the construction of a garden city on the site in question, a site which has not been in request in the past, and which is in many ways unsuitable for such a project.—Yours truly,

HARTINGTON.

2, Quai Debilly, July 22, 1918.

CHIPS.

Funds are being raised for building a new church at Bescar Lane, near Southport.

The question of making extensions to the Grammar School, Northallerton, is under consideration.

Edward Green Davies, surveyor to the Llangollen and Chirk District Council, was at Oswestry last Wednesday fined £40 for offences against the Swine Fever Orders. The defendant admitted he did not keep pigs separate for twenty-eight days when brought to his premises at Gobowen.

Sir John Mowlem Burt, of Carthion, Swanage, Dorset, chairman and one of the governing directors of John Mowlem and Co., contractors, who died on February 20, in his 74th year, has left £206,453, the net personalty being £180,932. In addition to a number of legacies to relatives, the testator left £250 to the Swanage Hospital.

Mr. Albert Ernest Lucas, of the firm of Messrs. Lucas and Sons, builders and contractors, West Street, Boston, died suddenly at his residence on the Spilsby Road at an early hour on the 19th inst. He had not been in good health for some time, but he was attending to business the previous day. Deceased, who was 43 years of age, leaves a widow and daughter. His son was in the Essex Regiment, and has been missing for some time.

Mr. Macpherson, in a written answer to a question about the issue of the commemorative plaques and scrolls to the next-of-kin of those who have fallen in the war, states that he cannot say when the first of these scrolls and plaques will be ready. A part of the paper for the former has been delivered, and the blocks will be ready in a fortnight. The arrangements for the manufacture of the plaques have been difficult to make, and the progress of the enterprise is influenced by war conditions. Every effort is being made to expedite it.

Dr. R. Hensleigh Walter, of Stoke-sub-Hamden, Somerset, has presented to the Somerset County Museum at Taunton, at the seventieth annual meeting of the Somerset Archæological Society, all the Romano-British antiquities from Ham Hill, hitherto lent by him. This added to the Norris and Walter collections already belonging to the museum, forms an important group of about 1,000 objects. Researches at Ham Hill began a hundred years ago, and have extended over four generations of the Walter family. Dr. Haverfield, Camden Professor of Ancient History at Oxford, was elected president of the society.

Our Office Table.

Architects and engineers will find "Selwyn's Metric Conversion Tables," by W. Erskine Dommett (London: James Selwyn and Co., Ltd., 20, Essex Street, Strand, W.C., 2s. 6d. net), very helpful. Tables common to all branches of engineering and science are given fully, less space being allotted to lesser-used tables. The book slips easily into the coat pocket, and the upright arrangement on the pages of the tables obviates the embarrassing necessity of turning the book round when using them, a piece of forethought we commend to the publishers and printers of works of the kind, who either ignore or are ignorant of the difference this makes.

Under the Defence of the Realm Regulations, the Board of Trade have given notice of their intention to take possession, through the Controller of Timber Supplies, of all descriptions of sawn and planed softwood (excluding box shooks) arriving in the United Kingdom on and after July 22, 1918. No transactions or transfers in respect of bills of lading for such goods shall be made by the holders thereof after that date, and such holders are requested to send full particulars to the Government Timber Buyer, Salisbury House, Finsbury circus, London, E.C.2.

The Committee on Production announce the following award in regard to a claim by the Scottish building trade for an advance of 4d. an hour on existing rates of wages:—"To workmen who, since the outbreak of war, have received general advances amounting to 4¼d. an hour and upwards, but less than 5½d. an hour, including bonuses, there shall be paid such further increase as shall make the advances up to 5½d. an hour over pre-war rates. In cases in which the general advances have amounted to less than 4¼d. an hour the workmen concerned shall receive a further increase of 1¼d. an hour. Any payment made to any of the workmen concerned in respect of the bonus of 12½ per cent. or 7½d. per cent. on earnings granted to certain munition workers under statutory rules and orders, 1917, or otherwise, is to be excluded from the calculation of the amount of general advances referred to."

Some pictures not hitherto seen by the public have recently been placed on exhibition in the National Gallery. Among English paintings is a small portrait group in oil by John Downman, representing General Sir Ralph Abercrombie in conversation with a younger man, which has been presented to the nation by Mr. Louis Duveen. In the same room hangs a little portrait of a lady by Arthur Devis, bought from Mr. Augustus Walker. A large Italian landscape by Turner, not quite finished, is also new to London. Of the French pictures the most important is a landscape by Courbet, from the Lane collection, representing a snowstorm. In the Dutch room, a "Garden Scene with Waterfowl," by Anthonie Van Borssum, presented by Mr. J. P. Heseltine, and a portrait of a Dutch officer, by Gerard Honthorst, the gift of an anonymous donor, are now shown for the first time. The new Italian pictures consist of a further selection of works from the Layard Bequest, including examples of Moretto, Morone, Bonifazio, Paris Bordone, Previtali, Bissoli, Gianpetrino, and a little Florentine portrait which is now labelled "School of Botticelli."

The Trustees of the British Museum announce that a temporary exhibition will be opened in a few of the galleries of the British Museum to-morrow, consisting chiefly of casts and facsimiles, which it is hoped will be representative of some parts of the treasures of the British Museum. The exhibition will include Greek sculpture, classical coins, British coins and medals, historical documents and autographs (naval and military), illuminated manuscripts, early Bibles, and other printed books. If the experiment of reopening is successful, it may be possible to extend it later to other galleries of the Museum. The exhibition will be open from 10 a.m. to 1 p.m. and from 2 to 5, on each week day from August 1 until further notice.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

DOVER.—Work for the town council. Accepted tenders:—

Grigg, W. H., bricklayer £147 19s. 6½d., carpenter £127 1s. 11d.; Thomas, J., ironmonger £245 14s. 7½d., smith £30 15s. 4d.; Emery Bros., painting £152 1s. 6d.; Sneller, P. W., carting. Electricity Department:—Harvey, F., bricklayer, £72 18s.; Grigg, W. H., carpenter, £23 15s.; Wright and Sons, ironmonger, £349 2s. 8d.; Grigg, W. H., painter, £33 3s. 3d. Tramways Department:—Grigg, W. H., carpenter, £50 12s. 5½d.; Thomas, J., ironmonger £102 10s. 4d., smith £24 16s. 6d.; Grigg, W. H., painter, £30 4s. 2½d.; Underdown, H., stationer, £144 18s. 3½d.

ESSEX.—The following is a list of the lowest tenders received for renovations, etc., to various schools in the county for the Essex Education Committee. G. Topham Forrest, F.C.P., County Architect:—

South Weald Crescent Road, Mr. Hagan, £15 10s. Harwich County High, Mr. King, £123 6s. Bradfield School House, Parsons and Sons, £15 15s. Loughton Council, Foster and Sons, £81 12s. 6d. Maldon Council Infants', Ward, L., £83 15s. 6d. Grays, Bridge Road, Pearson and Son, £237 10s. Grays, Arthur Street, Bratchell, E. G., £30 15s. Stanford Le Hope, Mr. Cooke, £39 10s. West Thurrock Council, Pearson and Son, £85 10s. Aveley Council, Bratchell, E. G., £78 10s. Romford, London Road, Dowsing and Davis, £10 10s. Romford, Mawney Road, Bratchell, E. G., £27 10s. Romford, Albert Road, Bratchell, E. G., £89 10s. Beacontree Heath, Bratchell, E. G., £23 10s. Romford, Salisbury Road, Bratchell, E. G., £14 15s. Hornchurch, Park Lane, Bratchell, E. G., £5 15s. Harold Wood Council, Bratchell, E. G., £47 10s. Dagenham, Marsh Green, Bratchell, E. G., £37 10s. Dagenham Infants', Bratchell, E. G., £10 5s. Wenden's Ambo Council, Bell and Sons, £13 19s. 6d. Walthamstow Girls' High, Fuller and Sons, £170. Wanstead, Aldersbrook Infants' Council, Wallace and Wallace, £40. Woodford, Cowslip Road, Jolliffe, J., £13 10s. Woodford School for M.D. children, Wallace and Wallace, £8 10s. Woodford Bridge Temporary, Sheppard Bros., £2 10s. Woodford Bridge Council, Wallace and Wallace, £18 15s Woodford Green Council, Sheppard Bros., £8 14s. Woodford Churchfields, Wallace and Wallace, £48 8s. Loughton, County High School for Girls (heating), Kinnell, C. P., and Co., £337 10s. Loughton, County High School for Girls (builders' work in connection with heating), Mark Congdon and Co., £52.

HOUNSLOW—For fitting combustion chambers to boilers at the refuse destructor, for the Heston and Isleworth Urban District Council:—

Windsor, H., and Co., Ltd. .. £234 10 0
(Recommended for acceptance.)

KINGSTON-BY-SEA (SUSSEX).—For repairs to schools, for the West Sussex Education Committee. Accepted tenders:—

Kingston-by-Sea, Woolgar Bros., Southwick, £41 18s.; Southwick, Woolgar Bros., £34 18s.; Upper Beding, Bristow, E., and Co., Steyning, £98 10s.

LEYTON.—For painting, etc., for the Leyton Education Committee. Accepted tenders:—

Painting, Inns, A. H., Cann Hall Road School £277, Newport Road School £76 17s.; Watts, P., High Road School, £203 3s. Re-dressing tar-paving, Hobman, A. C. W., and Co., Ltd., Davies Lane £46 10s., Downsell Road Schools £61 10s. 6d.

LONDON, E.C.—For painting and decorating the Central Finsbury Radical Club, 326, City Road, E.C.1:—

Markham, C., 11, Great Sutton Street, Goswell Road, E.C. ..	£257 0 0
Lister and Co., 37, Snow Hill, Holborn Viaduct, E.C.	224 15 0
Renn, F., 5, Popham Road, Essex Road	196 14 0
Mather, J. C., 38, Northampton Street, Islington, N.1*	164 0 0

(*Accepted.)

WEST HAM.—For painting exterior of the South Hallsville School, for the education committee:—

Chapman and Sturton, £220, accepted in place of Barker, J., and Co., £189 (withdrawn).

WIGAN.—For cleaning and painting the inside and outside of the tramway offices, and the outside of Nos. 28 and 32, Market Place, for the corporation:—

Dawber and Cheetham, Pemberton, Wigan £80 0 0
(Accepted.)

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LIST OF TENDERS OPEN.

BUILDINGS.

August 13.—Facing a portion of filter walls at the sewage farm, Chalk Hill, near Dunstable, with Staffordshire bricks.—For the Corporation.—W. F. Wilkins, Borough Surveyor, Town Hall, Dunstable.

No Date.—Erection in Newark district of corrugated iron building, 210ft. long, 46ft. span, 36ft. to apex. P. 4 certificate.—Particulars from Messrs. G. Sands and Son, Ltd., Colwick, Notts.

FURNITURE.

August 2.—Tenders for supplying bedsteads and bedding, side tables, and school desks, are invited by the Commissioners of H.M. Works. Forms of tender from the Controller of Supplies, H.M. Office of Works, King Charles Street, Westminster, S.W.1; tenders to the Secretary, H.M. Office of Works, Storey's Gate, S.W.1.

PAINTING.

August 1.—Painting with two coats of white paint the whole of the external woodwork at Chestergate Clothing Works, Stockport.—J. Preston and Son, Ltd., Chestergate, Stockport.

August 2.—Painting internally at the Llandygwydd N.P. School.—For the Cardigan County Education Committee.—Rev. J. Williams, District Education Office, Cardigan.

August 7.—External painting of houses, cottages, and outbuildings at Barry, Sully, Penarth, St.-y-Nyll, Radyr Court Farm, Whitchurch, Llanishen, Leechmore, and Monknash.—For the Glamorgan County Council.—Glamorgan County Hall, Cardiff.

SANITARY.

August 3-6.—Construction of an outfall sewer for the district of Burry Port, comprising about half a mile of 15in. cast-iron and stoneware pipe sewers, and manholes, lampholes and ventilating shafts, 15in. cast-iron sea outfall and other work, in accordance with the plans and specification of the engineer, A. P. I. Cotterell, M.I.C.E., 17, Old Queen Street, Westminster.—For the Burry Port Urban District Council.—J. L. Phillips, Clerk, 5, Frederick Street, Llanelly.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

It is particularly requested that all drawings and all communications respecting illustrations or literary matter, books for review, etc., should be addressed to the Editor of the BUILDING NEWS, Effingham House, 1, Arundel Street, Strand, W.C.2, and not to members of the staff by name. Delay is not infrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

When favouring us with drawings or photographs, architects are asked kindly to state how long the building has been erected. It does neither them nor us much good to illustrate buildings which have been some time executed, except under special circumstances.

*** Drawings of selected competition designs, important public and private buildings, details of old and new work, and good sketches are always welcome, and for such no charge is made for insertion. Of more commonplace subjects, small churches, chapels, houses, etc.—we have usually far more sent than we can insert, but are glad to do so when space permits, on mutually advantageous terms, which may be ascertained on application.

RECEIVED.—A. H. and Son—J. W.—V., Ltd.—S. Y. O. and L.—Lt. C. M.—G. B. B.—M. R. and Co.—G. R. T.—F. D. and Co.—F. B. and Co., Ltd.—D. and Co.—R. F. W. and Son.

R. POTTER.—Yes.

D. H. and Co.—Thanks, no.

ZINC.—We know nothing of the firm.

W. L.—Inquiries about books must be made of publishers.

E. R.—Our recent past issues in which the Local Government Board and R.I.B.A. premiated designs for workmen's dwellings have been illustrated are those of April 10, 17, 24, May 1, 8, 15, 22, 29, June 5, 12, 19, 26, and July 10 and 24. The fourteen numbers can be had post free for 7s. 6d.

S. M. A., P., R. R., AND OTHERS.—We can make no such arrangements, and it is not in the least likely that any newsagent will disappoint his regular customers in order to sell chance copies of this or any other paper to chance buyers who are making holiday, or away from home from other causes. All such can make sure of getting their paper promptly and punctually by remitting direct to us at the office sixpence per copy for one or more weeks as desired, when it will be sent them post free.

The death is announced, on July 29, at 16, Russell Square, W.C., after a long illness, of Mr. Horace Porter, M.A., F.R.I.B.A., aged 57. The funeral service will be held at St. Giles's Church, Bloomsbury, on Friday, August 2.

LATEST PRICES.

N.B.—All prices must be regarded as merely approximate for the present, as our usual sources of information are in many cases failing us.

TIMBER.

Owing to stoppage of supplies all prices have advanced considerably, and are controlled by the Director of Materials.

IRON.

Rolled Steel Joists, English.....
Compound Girders, Ordinary Sections .....
Compound Stanchions .....
Angles, Tees, Channels and Flitch Plates .....
Wrought-Iron Girder Plates ....
Steel Girder Plates .....
Steel Sheets (Single or Double) ..
Steel Strip .....
Basic Bars .....
Mild Steel Bars .....
Steel Bars, Ferro-Concrete Quality (basis price) .....

} Prices controlled by Ministry of Munitions.

OTHER METALS.

A licence must be obtained from the Director of Materials (A. M. 2(E)), Hotel Victoria, Northumberland Avenue, S.W., and should accompany orders for quantities over 1 cwt.

	Per ton.				Per ton.		
Lead Water Pipe, Town.....	*£40	0	0	to	—		
Country.....	*41	10	0	,,	—		
,, Barrel Pipe, Town	*41	10	0	,,	—		
,, ,, ,, Country.....	*42	10	0	,,	—		
Lead Pipe, tinned inside, Town	*43	10	0	,,	—		
,, ,, ,, ,, Country	*44	10	0	,,	—		
Lead Pipe, tinned inside and outside.....Town	*47	0	0	,,	—		
,, ,, ,, ,, Country	*48	0	0	,,	—		
Composition Gas-Pipe, Town..	*44	10	0	,,	—		
,, ,, Country	*45	10	0	,,	—		
Lead Soil-pipe (up to 4½in.) Town	*43	10	0	,,	—		
,, ,, ,, ,, Country	*44	10	0	,,	—		
[Over 4½in. £1 per ton extra.]							
Lead, Common Brands.....	26	0	0	,,	—		
Lead, 4lb. sheet, English.....	38	10	0	,,	—		
Lead Shot, in 28lb. bags	—			,,	—		
Copper Sheets, Sheathing & Rods	168	0	0	,,	170	0	0
Copper, British Cake and Ingot	147	0	0	,,	150	0	0
Tin, English Ingots	418	0	0	,,	—		
Do., Bars	186	10	0	,,	187	10	0
Pig Lead, in 1cwt. Pigs. Town ..	33	12	6	,,	34	12	0
Sheet Lead, Town.....	*£40	0	0	,,	—		
,, ,, Country	*41	0	0	,,	—		
Genuine White Lead.....	*60	10	0	,,	—		
Refined Red Lead	45	0	0	,,	—		
Sheet Zinc.....	144	0	0	,,	—		
Spelter	93	0	0	,,	110	0	0
Old Lead, against account.....	25	0	0	,,	—		
Tin .....per cwt.	21	0	0	,,	—		
Cut nails (per cwt. basis, ordinary brand)	1	11	0		—		

* For 5 cwt. lots and upwards.

BRICKS.

Sale, Purchase for use, of all Bricks exceeding 20,000 in number is now forbidden by the Minister of Munitions except by license of the Controller of Bricks, to whom all applications for permits must be made at Whitehall Place, S.W., marked "Building Brick Permit."

(All prices net.)

First Hard Stocks....	£4	0	0	per 1,000	alongside, in	
Second Hard Stocks..	3	15	0	,,	,,	[river.
Third Hard Stocks ..	1	14	0	,,	,,	,,
Mild Stocks.....	2	2	0	,,	,,	,,
Picked Stocks for Facings.....	3	5	0	,,	delivered at rail. station.	
Flettons	2	10	0	,,	,,	,,
Best Fareham Red ..	4	0	0		,,	,,
Best Red Pressed Ruabon Facing....	5	15	0	,,	,,	,,
Best Blue Pressed Staffordshire	6	5	0	,,	,,	,,
Ditto Bullnose	6	10	0	,,	,,	,,

WHITE AND COLOURED GLAZED BRICKS

WHITE IVORY AND SALT GLAZED (PER 1,000).

	£	s.	d.
Stretchers	17	17	6
Headers	17	7	6
Quoins and Bullnose	21	7	6

Second quality £1 per 1,000 less.

OTHER COLOURS.

	Best.			Seconds.		
	£	s.	d.	£	s.	d.
Stretchers	23	7	6	18	7	6
Headers	22	17	6	17	17	6
Quoins and Bullnose	26	17	6	21	17	6

MOULDED BRICKS.

Stretchers and headers, 8d. each (plus 50%).
Internal and external angles, 1s. 2d. each (plus 50%).
Majolica and soft glazed stretchers and headers, £28 7s. 6d. per 1,000.
Majolica and soft glazed quoins and bullnose, £33 7s. 6d. per 1,000.
NOTE.—Above prices are in full truckloads at London Goods Station.

SAND AND BALLAST.

	s.	d.	
Thames Sand	12	6	per yard, delivered.
,, Ballast	12	6	,, ,,
Pit Sand.....	12	6	,, ,,
Best Washed Sand	14	0	,, ,,

CEMENT AND LIME.

	s.	d.		s.	d.	
Best Portland Cement	55	0	to	58	0	Per ton, delivered.
Ground Blue Lias Lime ...	33	6	at depot.			

Exclusive of charge for sacks.

	s.	d.	s.	d.	
Grey Stone Lime.....	47	0			per ton
Stourbridge Fireclay in sacks	37s.	6d.			per ton at depot.

STONE.*

		£	s.	d.
Yellow Magnesian, in blocks ..	per foot cube	0	3	3
Red Mansfield, ditto	,,	0	2	9
White Mansfield, ditto	,,	0	2	9
Red Corsehill, ditto	,,	0	2	6
Darley Dale, ditto	,,	0	2	5
Grienshill ditto.....	,,	0	2	4
Closeburn Red Freestone, ditto	per foot cube	0	2	2
Ancaster, ditto	,,	0	2	0
Chilmark (in truck at Nine Elms)	,,	0	1	10½
Hard York, ditto	,,	0	3	10
Do. do. 6 in. sawn both sides landings, random sizes	per foot sup.	0	3	3
Hard York, 3 in. slab sawn two sides, random sizes.....	per foot cube	0	1	3

OILS.

Rapeseed, English pale,	per ton	£28	15	0	to £29	5	0
Ditto, brown	,,	26	15	0	,, 27	5	0
Cottonseed, refined....	,,	29	0	0	,, 30	0	0
Olive, Spanish	,,	39	10	0	,, 40	0	0
Seal, pale.....	,,	21	0	0	,, 21	10	0
Coconut, Cochin	,,	46	0	0	,, 46	10	0
Ditto, Ceylon.....	,,	42	10	0	,, 43	0	0
Ditto, Mauritius	,,	42	10	0	,, 43	0	0
Palm, Lagos	,,	32	5	0	,, 33	5	0
Ditto, Nut Kernel.....	,,	35	0	0	,, 35	10	0
Oleine	,,	17	5	0	,, 19	5	0
Sperm	,,	30	0	0	,, 31	0	0
Linseed Oil.....	per gal.	0	8	7	Controlled.		
Baltic Oil.....	,,	—			,,		
Turpentine.....	,,	0	11	3	,, ,,		
Putty (Genuine Linseed Oil)	per cwt.	1	2	0	,,		

TILES.

	s.	d.		Divrd.at
Plain red roofing tiles	62	6	per 1,000	ry. sn.
Hip and Valley tiles.....5s. to	9	0	per doz.	,,
Broseley tiles	75	0	per 1,000	,,
Ruabon red, brown, or brindled ditto (Edwards)	77	6	,,	,,
Ornamental ditto	80	0	,,	,,
Staffordshire (Hanley) Reds or brindled tiles	75	6	,,	,,
Hand-made sand-faced	80	0	,,	,,
Hip tiles .... 5s. to	9	0	per doz.	,,
Valley tiles..... 5s. to	9	0	,,	,,

SLATES.

Where quotations for slates are not obtainable at present architects and builders will do well to specify and use some of the excellent substitutes which have found favour of late, partly as a consequence of the unsatisfactory condition of the slate industry, as well as the result of their greater durability and other recommendatory qualities. Prices of some of the best of these are as follows:—

ASBESTOS ROOFING TILES, supplied by the British Uralite Co., Ltd., 85, Gresham Street, E.C. From £4 14s. per 1,000, 9 in. by 9 in., 400 tiles per square of roof covered, price per square, 37s. 8d., to £33 8s. per 1,000, 24 in. by 24 in., 34 tiles per square of roof covered, price per square, 22s. 3d.

ALLIGATOR ROOFING, supplied by the British Roofing Co., Ltd., 11, John St., Crutched Friars, E.C., in rolls of 216 feet super, with the necessary mastic and nails for fixing: 1 ply, 19s. per roll; 2 ply, 25s. per roll; 3 ply, 33s. per roll.

"POILITE." Made by Bell's Asbestos Co., Ltd., Southwark Street, S.E. Standard tiles in red, blue, and grey colours, carriage paid to nearest railway station, 15½ by 15½.—Red, £14 3s. 3d. per 1,000; grey or blue, £12 15s. per 1,000. Approximate prices per square, fixed complete to roofboards or battens:—Red, £1 10s. 9d.; grey or blue, £1 8s. 9d. At present above prices are subject to a premium of 17½ to 33⅓ per cent. in consequence of rise in prices of material and other war exigencies.

ROK ROOFING. Made by D. Anderson and Son, Ltd., Lagan Felt Works, Belfast, and Roach Road Works, Old Ford, London, E. Prices and particulars in new booklet "V," to be had on application.

GLASS (IN CRATES).

English Sheet Glass	15 oz.	21 oz.	26 oz.	32 oz.
Fourths	7d. ..	8d. ..	9d. ..	10d.
Thirds	7½d. ..	8½d. ..	9½d. ..	10½d.
Fluted Sheet.....	7½d. ..	8½d. ..	— ..	—

Hartley's English Rolled Plate	⅛ in.	¼ in.	½ in.
	5d. ..	5½d. ..	6d.

	White.	Tinted.
Figured Rolled	6½d. ..	7½d.
Renoussine	6d. ..	7d.
Rolled Sheet	6d. ..	—
Stippolyte.....	6½d. ..	7½d.

A parochial hall and Sunday school are to be built at Kimberworth, Rotherhm.

In view of the number of military patients sent for treatment, the X-Ray department at St. Bartholomew's Hospital is about to be extended at a cost of £5,000.

In a letter laid before the Court of Common Council last Thursday the Local Government Board stated that it was unable to sanction a charge against national funds for reimbursement of the whole or part of the cost of making good any damage done to public works, sewers, and other underground works through enemy air raids.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

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OUR ILLUSTRATIONS.

Chapel of the Order of the Thistle, the King's Stall, St. Giles' Cathedral, Edinburgh. Sir Robert Lorimer, A.R.S.A., F.R.I.B.A., Architect.

Municipal Buildings proposed to be erected, Bathgate, Edinburgh. Mr. J. Graham Fairley, Architect.

House at Balfour, Transvaal, South Africa. Plan and elevations. Mr. Herbert Baker, F.R.I.B.A., Architect.

Currente Calamo.

Sir Albert Stanley's reply to the well-founded criticisms last Wednesday of the new Household Fuel and Lighting Order were evasive and most unsatisfactory. Mr. Runciman declared quite truly that the Order struck at the very root of domestic comfort and efficiency, and would have more to do with unrest, ill-health, and discomfort in the coming winter than could arise from any change made by the Government since the beginning of the war. Moreover, the Order is most unfair; for instance, while in the coldest parts of the country the ordinary citizen is to be allowed only four tons and a half of coal, the pitmen will be allowed thirteen tons. It is only less unfair to the dwellers in the small houses, especially to those who have been induced to install gas and electricity. Moreover, it is being forced on us before it is possible to understand it, and the delay in issuing the application forms is disgraceful. The coal shortage, as Sir J. Walton saaid, is due to the fact that many collieries are only working three of four days a week; and if the collieds worked ful time, as the rest of us have to do, there would be no lack of coal and no need of the Order. The people of London and the large towns have not yet realised the black outlook before them during the coming winter; when they do there will be an outbreak of indignation which mya surprise the Coal Controller, and will, unfortunately, strengthen the hands of the pacifists and shirkers dangerously and needlessly. If Mr. Smallwood's statement that the Coal Control Department is costing thirteen millions a year is correct, there will be few who will not agree that it is a very big price to pay for a system which is so ghastly a failure.

What is "extraordinary traffic" on our roads? has now become a puzzle legal problem in the Courts. But it also raises practical points for contractors and builders; for county and urban councils; and finally, for the ratepayers. Roads wear out and need repair, which is costly. As they wear out much faster with very heavy traffic and new methods of transport this costliness rises. So the question comes, Cannot those who cause the increased traffic be made to pay something to the relief of the rates? Under various statutes this can be done where the traffic is held to be "extraordinary." The difficulty generally is to find a definition of this word which will fit the facts and so apply the law. The recent case of "Weston-super-Mare Urban District Council v. Henry Butt and Co., Ltd.," in the High Court lets a little light into the matter. The council claimed £1,750 from the defendants as the extra expenses to which they had been put in repairing roads in their district by reason of the great damage done to them by the extraordinary traffic of the defendants, who were quarry owners in the locality. It was shown that defendants had, in 1913, given up horse-drawn carts and taken to using steam wagons and trailers. The result was that in 1914 they carried more than 25,000 tons of stone, lime, etc., over a certain road, or nearly double what they had done in the year before. Mr. Justice Eve decided that this steam traction of such heavy loads had become "extraordinary traffic" within the Act, causing damage to the council's roads during some three years. But he also found that under the Act they could only recover for so much of the damage as was done during the year before action was taken. In the end he cut the claim for £1,750 down to £280, for which the plaintiffs had judgment. From this it is clear that our councils must wake up and move more quickly about this traffic for the sake of their ratepayers.

Sir Tudor Walters' Committee on National Housing has finished its report, the preparation of which has occupied twelve months. With the estimated needs, and the inadequate responses of the local authorities to meet them, which it recites our readers are already familiar. Probably the fact that local effort in Great Britain is not more responsive to build half the at least half-million houses wanted has convinced the Committee that "whatever local authorities may do a very large proportion of working-class housing must still depend on public utility societies or private speculation." If this is so—and we all know it *is* so—we really do not see the need of another "supreme guiding direction" in the shape of a fresh Department of the Local Government Board, with a big figure-head as Chief Commissioner, and a big staff of local inspectors "to secure effective co-ordination," and all drawing big salaries which will eat a pretty hole into anything the Government is going to contribute. With the recommendation that local authorities should employ local builders and local labour we are entirely in agreement, and with its suggestion as regards the necessary acquisition of land that the spécial powers possessed under the Defence of the Realm (Acquisition of Land Act, 1916) might be extended for a limited period of years. We do not think much is likely to come of any diversion of the munition factories to the production of standardised parts of houses. If so produced they will be more costly than if procured from the usual manufacturers, who will be quite able and ready to supply in the ordinary way of better quality and at reasonable figures.

Now the butcher and the baker are failing us, but doing none so badly for themselves, is the candlestick-maker coming into his own again, thanks to the exigent limitations of gas, petrol, and electricity? Some of us would not be sorry, for candlelight, after all, had a mellow charm of its own which the brilliancy of the incandescent gas burner, or the glare of the metallic filament, poorly compensates us for. Anyhow, in France candlestick-making is taking on a new lease of life. Even in some of the big towns there are houses which are not supplied with gas, where before the war petroleum or spirit was used for lighting purposes. Now that the use of these is restricted closely, recourse has to be made to the old-fashioned candle. This is true in the country especially, where candlesticks are in great demand, and everyone is buying them according to his means or fancy. At first they were made of copper, but when that metal became scarce brass was employed. Some of the modern examples have several branches and are very artistic. A domestic art metal worker at Aix, who has specialised in this kind of work, and has become quite a celebrity, has just constructed a series of tall iron candlesticks of very solid proportions which can hold several candles. They have been critically inspected by art metal critics, and are claimed to be true works of art, and to appeal to all lovers of beautiful ironwork.

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As regards stability, measurements of the vibrations of tall chimneys have been the subject of experiments on three chimneys of concrete reinforced by steel rods described in a paper by Prof. Omori, published in the Bulletin of the Imperial Earthquake Investigation Committee. One of these chimneys, erected by the Kuhara Mining Co. at Saganoseki, is said to be the tallest in the world. It is 550 ft. in height, 42 ft. 8 in. in diameter at the base and 27 ft. 5 in. at the top, the thickness of the wall being 29½ in. at the base and 7 in. at the top. The total weight of the structure, including the foundation, is 9,500 tons, and the pressure of the shaft on the ground below is three tons per square foot. When the chimney was finished measurements were made on five days (December 22-26, 1916) by means of two horizontal vibration recorders fixed to the top of the wall. The wind at the top attained a velocity of 24 metres per second on the first day, and the high value of 35 metres per second on the last; on the three intervening days it never exceeded 7 metres per second. With the latter velocity the vibrations of the chimney were insignificant, but they increased rapidly with the strength of the wind, the range (or double amplitude) being 20 millimetres in the direction of the wind, and 186 millimetres at right angles to it. The period of the vibration was almost constant, and varied from 2.52 to 2.58 seconds, the maximum acceleration on December 26 being 565 millimetres per second per second, or nearly one-third more than that of the semi-destructive Tokyo earthquake of 1894. Prof. Omori notices that the period of vibration is distinctly greater than that of the strong vibrations of a great earthquake (which is usually from 1 to 1½ seconds), and concludes that, in a district such as Saganoseki, in which the earthquakes are by no means violent, the effects of wind-pressure are likely to be more important than those of earthquake motion.

Says H. W. Mowery in a recent issue of the American *Safety News:* Millions of dollars are annually expended in making buildings fire-safe. Reinforced concrete, wired glass, kalamein doors and window-frames are all desirable, but it is evident from the seriousness of the slipping hazard, and the position that it occupies on our casualty list, that we must have more action in an effort to make walking safe. More than twelve times as many people are killed by falls on stairs, floors and sidewalks as there are from burning buildings. Wherever people walk or work every surface of cast iron or steel is a hazard, because a little oil, mud, soapy water or even constant wear makes it dangerously slippery. Metals should not be used for tread purposes unless there is embodied in the wearing surface some effective anti-slip material. Tile and terrazza floors, because they are not properly cleansed, frequently will cause falls and casualties. Soap-powders should not be used to clean such floors, but some sort of gritty cleanser. If the floor has already become slippery through the use of improper cleansers it must be scoured and rinsed with warm water. By inspection of old structures and rigid supervision of new construction, slipping hazards may be eliminated, and it certainly is of vital importance to devote to this phase of accident prevention the serious consideration and unceasing attention it requires. Too much stress cannot be laid on the importance of using hand-rails on stairways. They are not there for ornamentation!

We advise every reader to get a penny booklet just issued by Messrs. Gall and Inglis, 35, Henrietta Street, Covent Garden, W.C., and 20, Bernard Terrace, Edinburgh, entitled "Decimal Coinage and British Commerce." The author, Mr. J. Gall Inglis, is known to most of our readers and throughout the civilised world as one of the leading experts in the preparation of mercantile calculations, and he speaks with an authority unshared by a single advocate of the French decimal system or of that now before the House of Lords, which, as he truly says, if passed as it stands would be a national calamity, inasmuch as it would increase portentously, instead of lessening, the amount of writing and summation required in all book-keeping, and take from 10 to 40 per cent. more figures to write. Mr. Inglis proposes to make the half-sovereign the primary unit, and we think there is much to be said for his suggestion, though we should not like to say positively that it will solve all difficulties. Our feeling is, and always has been, that any effective reform in our coinage, weights, and measures can only be effected by the co-operation of all civilised nations, and that the blatherskite talked by cranks of the sort that saddled us for the time with "Daylight Saving" is but too likely to lead us into blind-alleys from which later on we shall have to retrace our steps with hesitation and difficulty, and that meanwhile all trade will be hampered and hindered. There is this much to be said for Mr. Inglis, at any rate: that he approaches the problem in the true scientific spirit, and we hope his practical pennyworth will sell by the million. We only regret our present limited space hinders from reprinting it *in toto*, as he freely gives leave to all to do.

The dream of a soldier whose foot has been smashed in a motor lorry just out of Ypres, "The New Moon: A Romance of Reconstruction," by Oliver Onions (London: Hodder and Stoughton, Warwick Square, 6s.), is well worth reading. The title is taken from More's "Utopia," and the aim is neither to amuse nor to instruct, but rather to show one or two directions in which "Reconstruction," about which so many are talking, does *not* lie, unless after a transition time of trouble and failure, which at times we fear is bound to come, unless some of our enthusiastic reconstructors are bit and bridled by wiser men. For, as one of them truly says on p. 218, "Chaos is that state of things in which a wise man's word isn't any better than a fool's," and if we are not heading pretty straight for it it will be more by sheer luck than good management! There is a delightful love episode in the story, which is told brightly throughout, and is worth any dozen of the homilies pouring out of the press by the hundred, every writer of which has found Utopia, provided, of course, he can put up danger signals on the road to every other man's! Our own consolation is, that such discussions *are* being held by the men at the front, as the author summarises on pp. 310 and 311, and as he says, "with as good a right," though, perhaps, neither so equably or after so saintly a fashion as some of our arm-chair reconstructors at home, from whom may we be saved, if need be, by the men who have fought and bled for England, while her politicians and Utopia-seekers are fooling them.

THE MUNITION STRIKES AND THEIR LESSON.

There is one small consolation in connection with the recent trouble with the munition workers, and that is that public opinion will not tolerate actual refusal to work at any of the supplies essential to national defence. So general has been the disgust of all decent people with the dastardly behaviour of those who engineered the strikes that we should have been little surprised, though Lynch law is the last thing we want to see in England, if a cord and the nearest lamp-post had not been the fate of more than one "inciter" to what, under the circumstances, was the worst of treason. There is every probability that some of them have been the tools of German intrigue, and some Sherlock Holmes might well devote himself to the exposure of such a conspiracy if the clues are real. If no such conspiracy can be unmasked, and the strikes were merely another test of strength between the Government and a few Labour anarchists, then it is high time martial law was proclaimed, and that law-abiding people of every class were protected from the insolent and truculent rascals who tried to stampede their fellows into a national stoppage of all supplies to the Army and Navy in this, probably, their greatest hour of need of every ounce of war material of all descriptions.

We are not concerned to justify or even discuss the action of the Ministry of Munitions against which the strikes were directed. Mr. Churchill has not been so fortunate in any service he has rendered to the State as to inspire much confidence in his wisdom; but much the same might be said of most of his colleagues, who have muddled matters of far more general concern to all of us than the last grievance of the munition workers. The difference between us and them is that while we grumble we do not strike. We submit because we are all out together to win the war; though nearly all of us, we trust, are resolved, as soon as that is done, the present Government, or any like it, shall give place to one in which the Democracy shall not be hoodwinked by demagogues, and by which England shall be guided back into true prosperity, and not blinded by the glamour of the conjurers who in the past have grown rich at the expense of the workers either with brain or muscle. And the first claim of any such Government on public trust will be the stern prohibi-

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tion by law of any strike by the worker or any lock-out by the employer until compulsory arbitration has been accepted.

For strikes of the sort the munition-workers threatened have of late years been against nothing of immediate grievance demanding redress. The action of the Ministry of Munitions, whether right or wrong—whether clearly understood by the Department itself, or likely wisely or unwisely to serve public interest, was not denounced by the strikers themselves as anything very dreadful in itself. The objections taken were to possible ulterior consequences—matters of suspicion and interpretation, this year, next year, some time, or never! The general public has shown that it has no particle of sympathy for strikes of suspicion! It has, and always has had, sympathy for real hardship, as in the case of the great Dock Strike, in which public opinion was entirely on the side of the dockers and powerfully helped them to win. It has, we venture to say, little confidence in Inquiry Committees, or in Industrial Councils after the Whitley Report or any other fashion. They are only more or less the clever expedients of politicians and cranks, invented with the idea of shifting responsibility from the shoulders of the Government or the particular Department concerned, and all the optimism of the time about them is simply the camouflage of the seat-hunters in the next Parliament who are playing to the gallery for votes and hope to catch those of the workers, and who, meanwhile, have few but soft words for shameful conduct such as that of the striking munition-workers.

We should not waste space in discussing this matter unless we were certain that trouble is in store for us when peace comes unless the prohibition of strikes or lock-outs on any pretence is made penal within the scope of the ordinary law, without due notice, and only then on justifiable grounds and after compulsory arbitration has failed. Not many of us can have forgotten that, but for the war, a national strike or a lock-out was almost certain in 1914. That contingency was brought about by want of wisdom on both sides, and had nothing to do with really vital questions, such, for instance, as wages or hours of work. We said then, and we say it again now, that only an ordinary court of law can be trusted with the power to forbid strikes or lock-outs prior to arbitration, or to decide after the failure thereof whether circumstances justified either, and, if not, to punish those responsible for such breaches of economic peace, sustained if necessary by prompt police or military force.

We say this in the interests of all workers. The lower middle classes have lost little by the war. They are for the most part earning wages which cannot possibly be maintained when peace comes. They may and should then be enabled to earn a fair living wage in reasonable proportion to the cost of living under proper conditions; and, if they will abandon the evil habit of malingering to spin out work, with the enjoyment of more leisure. But neither benefit can be theirs under a continuance of our past economic system of the so-called "Free Trade," which enabled the profiteer to pile up huge fortunes by collusion with alien competitors for work here, or for the dumping here of goods and material that ruined one branch of British industry after another. Another five years will probably see the British worker as convinced a "Protectionist" as his American or Australian brother. It is up to him to remember that one class alone cannot benefit any more solely at the cost of the rest than the vested interests which exploited "Free Trade" at the cost of the home producer. We are persuaded that if the rest of us fail to see this the women-voters will not, and that their demand for fair play all round will not lack force, possibly to the surprise of some husbands and fathers of the sort akin to the munition-worker who confessed not many days since to earning seven to nine pounds a week, and the weekly contribution therefrom of twenty-five shillings to the domestic exchequer!

ESTIMATING METHODS FOR THE CONTRACTOR.

The ordinary business man, in order to keep tab on his profit and loss account, uses strictly business accounting methods. Is not the contractor under the same responsibility, when it comes to a question of prosperity or bankruptcy, as the merchant? In fact, the merchant is not dealing with the element of uncertainty to anything like the same degree as the contractor. The great disparity in bids for the same piece of work, which is so very general, has resulted in creating considerable doubt in the minds of the people as to whether contractors as a whole use reliable business methods. The following article by Mr. E. L. Seabrook, in the *American National Builder*, throws considerable light on the subject of estimating methods and its importance as the fundamental item of all contract work:—

Estimating is the vital part of the contracting business. The estimate can put the business into bankruptcy or place it in a flourishing condition. Correct estimating depends upon a great many factors, and the estimator must know a great deal about many things. Business methods are focussed in the estimate; handling labour and right buying of material are also component parts of it. The estimator in large and complicated construction work holds the financial future of his firm at the point of the lead pencil. This is no less true of the small building contractor.

Despite the vital importance of estimating, many go at it in a most haphazard manner rather than as a serious business problem involving profit or loss and the financial stability of the business.

Accurate estimating is possible only by comparing the quantities of labour and material actually used with the amounts estimated. In order to do this it is necessary to keep in some permanent form a record of the quantities used in compiling the estimate. Some element of uncertainty enters into estimating, but there should be no "guess work" permitted on such a vital business problem. Estimating should be based on experiences from contracts and work already performed. This experience will be available if proper accounting methods are practised. This involves the keeping of an accurate record of each piece of work, big or little, of the amount of labour and material used. How is it possible to intelligently make an estimate or price when it is not known whether the exact kind or similar work previously performed yielded a profit or made a loss?

In spite of this self-evident fact, many go on making estimates without the slightest idea as to whether previous work of a like nature was done at a profit or a loss. From this it will be seen that estimating is closely allied to accounting and bookkeeping. The competent estimator must draw his data from several sources—prices of material, labour, experience on similar work, and a bookkeeping or accounting system which will show, among other things, the cost of conducting business or overhead.

Every estimate or price is or should be composed of four elements: labour, material, overhead, profit.

Even a casual study of the composition of an estimate or price shows that it is not correct if it does not contain these four elements. It is, therefore, quite apparent that the proper method is to build up the estimate or put it together from the elements that compose it. While these four elements are related to each other, each is distinct so far as the quantity or amount is concerned. When the estimate is completed it should be possible to know the exact amount allowed for each element. When the contract has been completed the estimated amounts should be compared with those actually used in the performance of the work.

THE BUILDING CONTRACTOR'S METHODS AS COMPARED WITH THOSE OF THE MERCHANT.

The building contractor is no less a merchant because he applies the material he buys to buildings than one retailing merchandise. But he has assumed two jobs instead of one. The compilation of a price and distribution of the operating expense differs radically between merchandising and contracting.

In merchandising the selling price is placed on the article after its cost is known.

In contracting the selling price is placed on the work before the cost is known.

The merchant takes his cost from the invoice; the contractor must estimate the amount of labour and material required, and is never certain of the cost until the work is completed. The merchant, in naming his selling price, has no fluctuating factors, such as labour and material. There being but one method of applying "overhead" and profit, price uniformity of merchandising naturally follows. Evenness and stability of prices are the results of such uniform application in merchandising.

Unfortunately this uniformity of cost of overhead and profit application does not exist in contracting. The contractor must estimate, and there is an element of uncertainty, and because of this uncertainty many contractors take a gamble. If, like the merchant, they knew exactly where cost ended, there would be no disposition to take a chance. Then, again, there is no such thing as a perfect cost system. The exact cost of an article where more than one line is taken on is not determinable. For all practical purposes, however, the approximate cost, or overhead, can be determined. Different methods of distributing expense, or overhead, produce different estimates or prices. The cost of conducting business is of necessity distributed on a theory, and these theories are legion. A dozen firms will have as many expense distribution theories. None of these is perfect, otherwise it would be a fact and not a theory. Ten firms with as many theories of expense distribution will make ten different selling prices. The overhead enters largely into the contracting business, and the distribution of this expense is the reason for variation in estimates from the same plans and specifications. The percentage of overhead may be the same, but the method or theory of distributing this produces different results in the final estimate. This variation can be very forcibly illustrated by the experience of two firms in the same line of business, located in adjoining towns. The sales of both were nearly the same, and both made a fair profit. One firm based its overhead on productive labour, which was 51 per cent. of this item; the other took productive labour and material combined, amounting to 22 per cent., as the basis upon which to apply the overhead. The accounting systems of both firms were excellent, and there is nothing exceptional in the ratios of expense.

Suppose these two firms are invited to estimate on the same contract, using these ratios in computing the overhead in the estimate:—

ESTIMATE No. 1.

Cost of Material	$200.00
Cost of Labour	340.00
	$540.00
Overhead, 51 per cent. Productive Labour	173.40
First cost	$713.40

ESTIMATE No. 2.

Cost of Material	$200.00
Cost of Labour	340.00
	$540.00
Overhead, 22 per cent. of Labour and Material	118.80
First Cost	658.80

(*Continued on page 98*)

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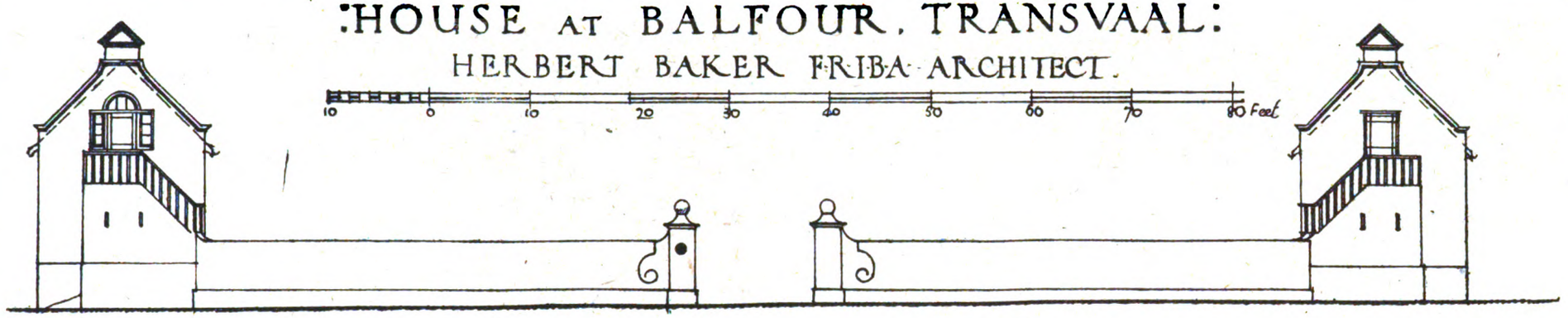
HOUSE AT BALFOUR, TRANSVAAL:

HERBERT BAKER F.R.I.B.A. ARCHITECT.



COURTYARD ENTRANCE & ENDS OF WINGS.

·SOUTH ELLVATION·

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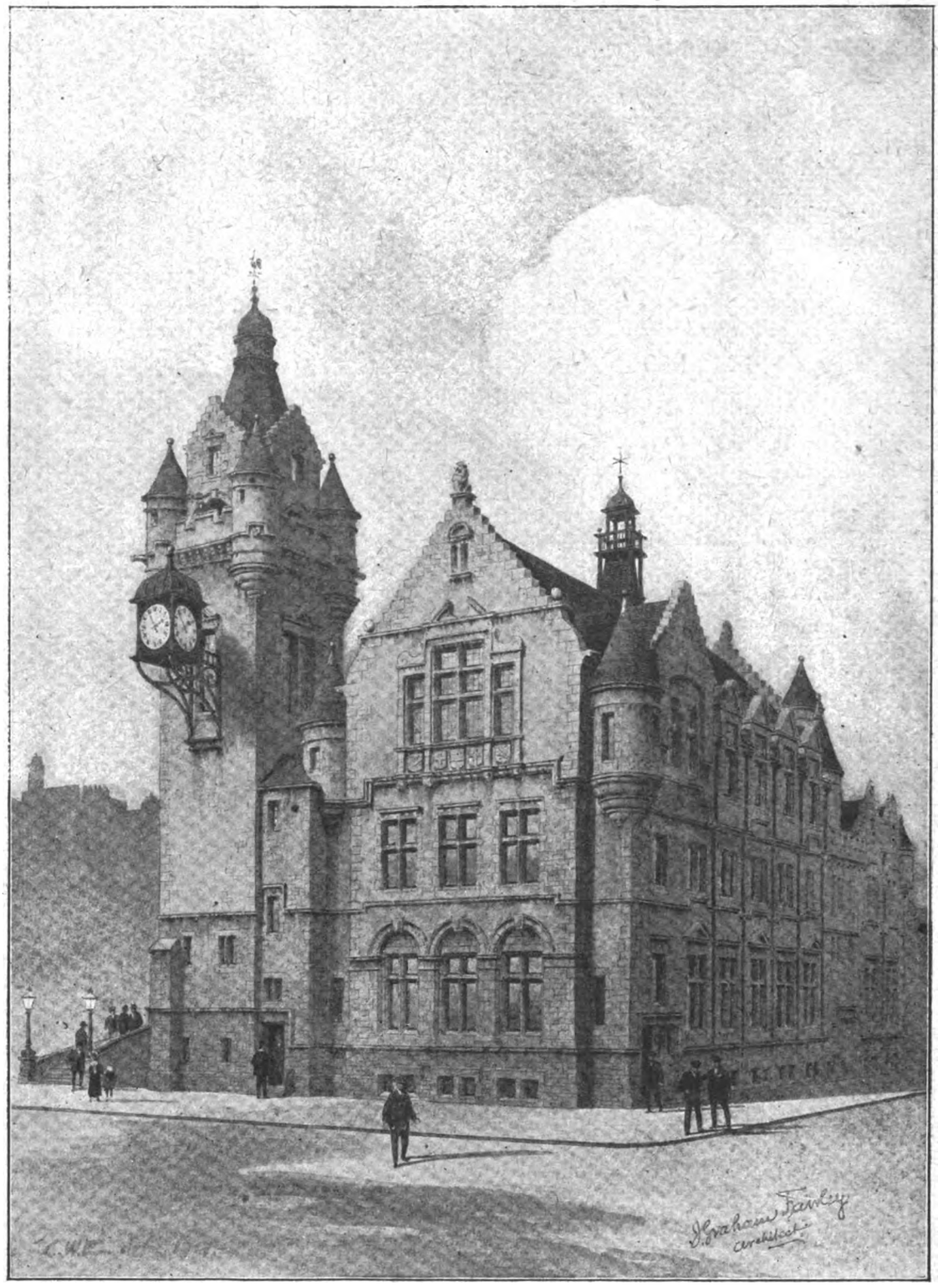

PROPOSED MUNICIPAL BUILDINGS, BATHGATE, EDINBURGH.
Mr. J. GRAHAM FAIRLEY, Architect.

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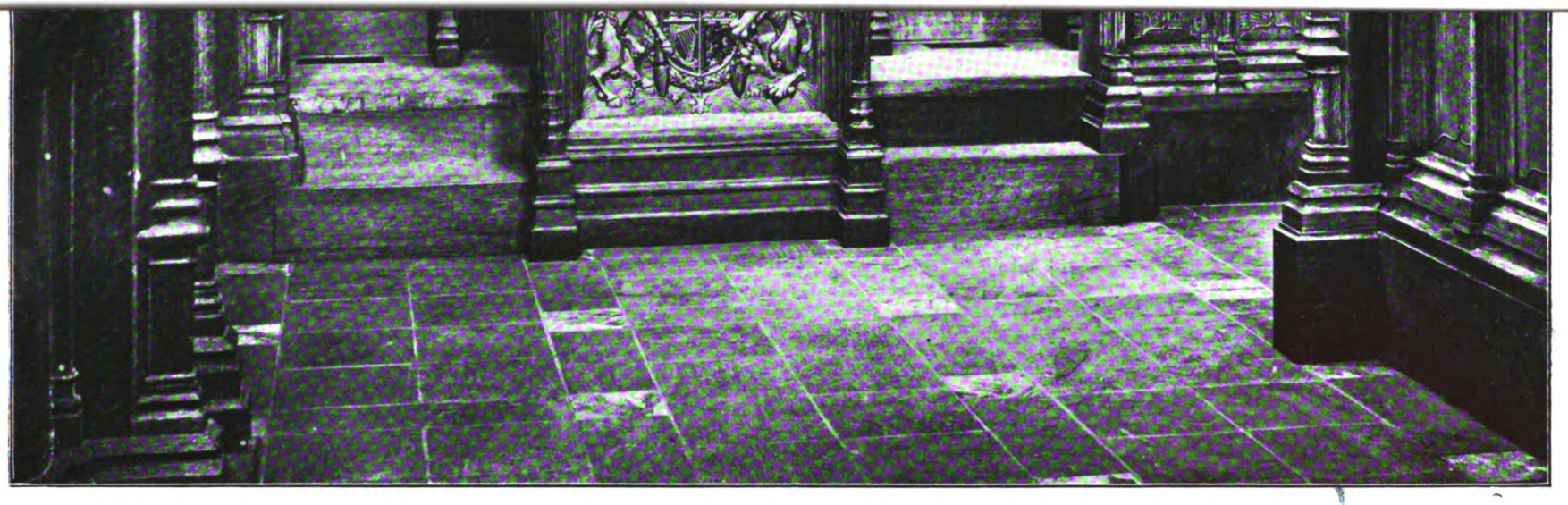

Alex. A. Inglis, Photo.]

THE KING'S STALL,

CHAPEL OF THE ORDER OF THE THISTLE, ST. GILES' CATHEDRAL, EDINBURGH.

Sir ROBERT LORIMER, A.R.S.A., F.R.I.B.A., Architect.

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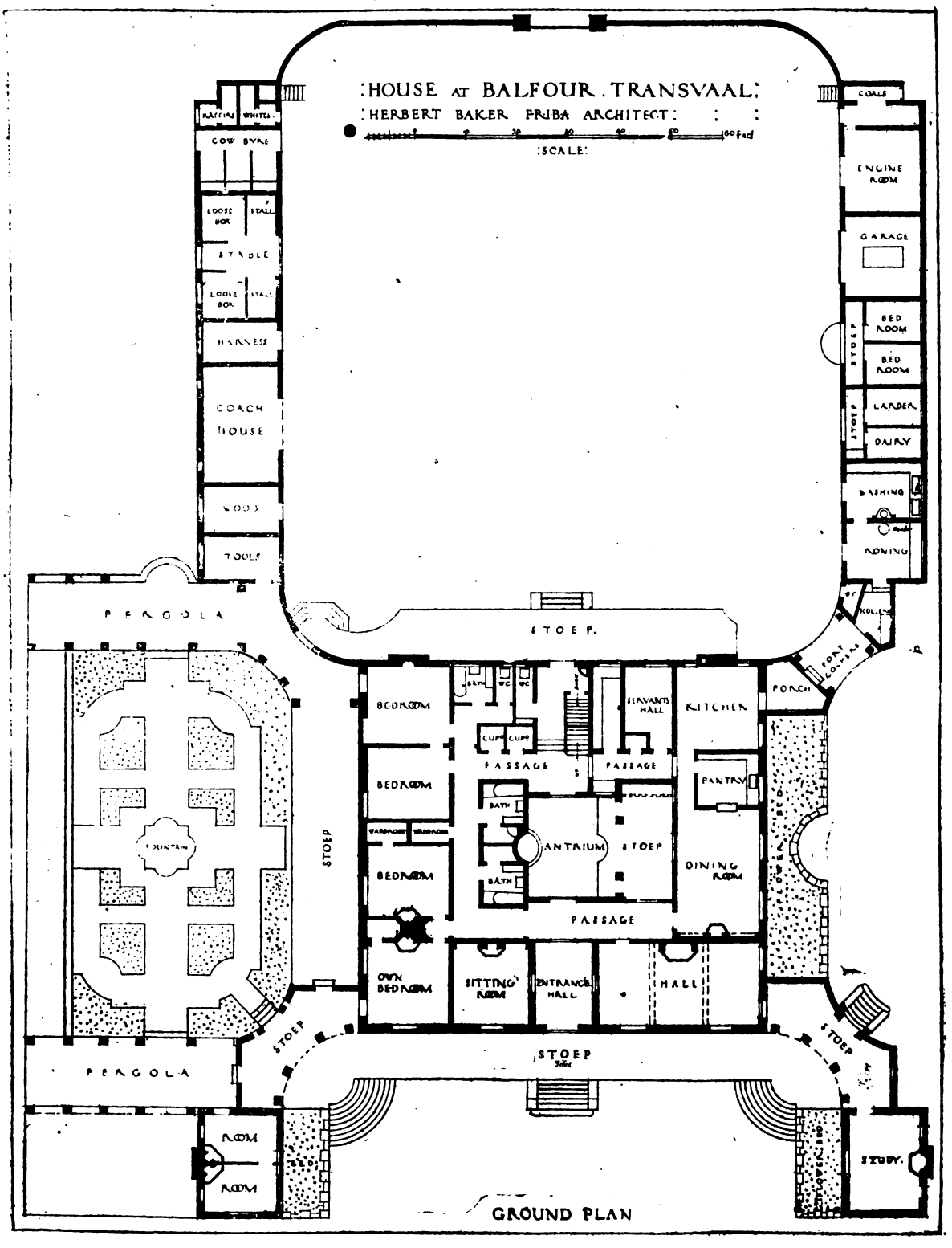

HOUSE AT BALFOUR, TRANSVAAL, SOUTH AFRICA.
GENERAL GROUND PLAN.
Mr. HERBERT BAKER, F.R.I.B.A., Architect.

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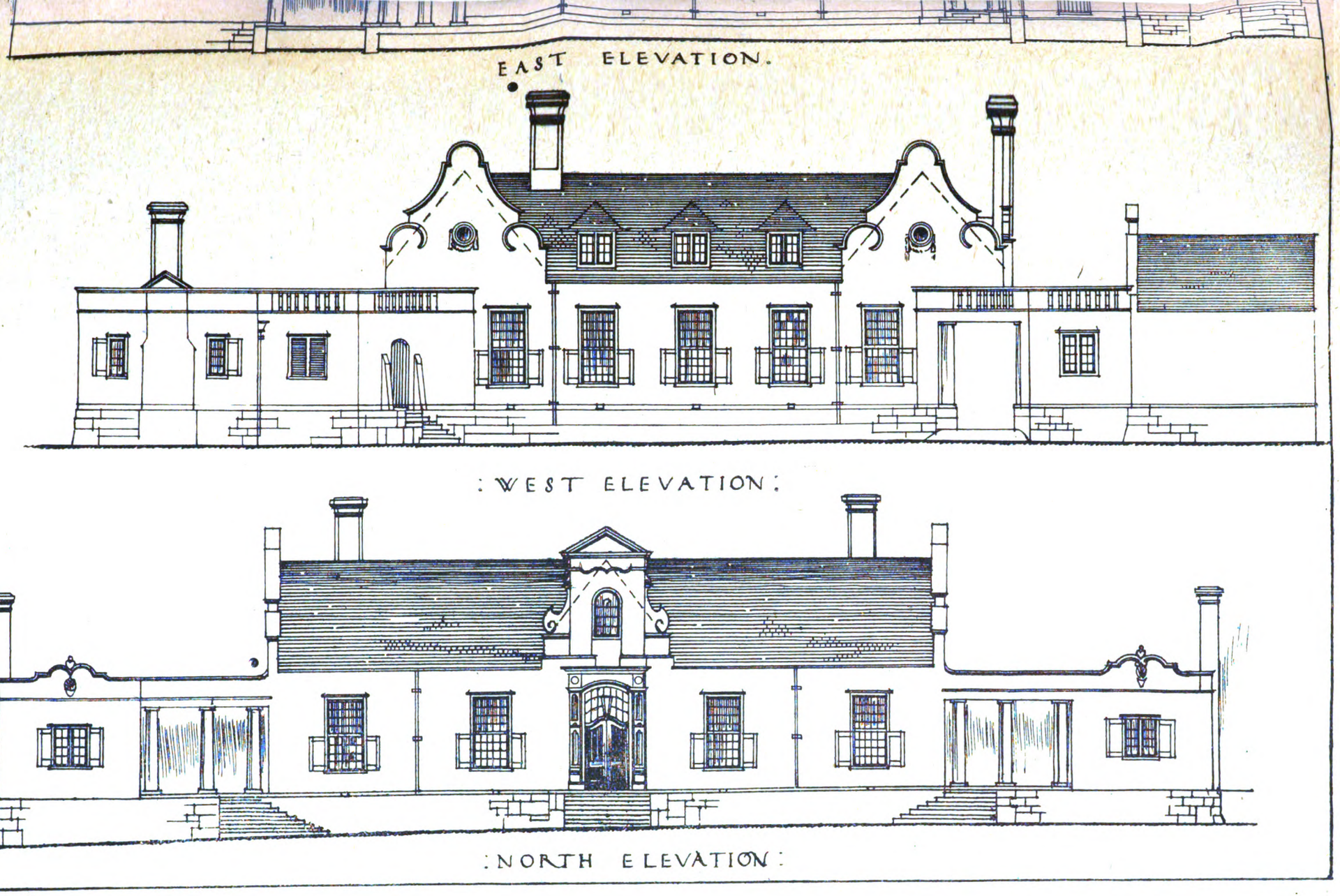

EAST ELEVATION.

: WEST ELEVATION :

: NORTH ELEVATION :

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Our Illustrations.

THE KING'S STALL, CHAPEL OF THE ORDER OF THE THISTLE, ST. GILES' CATHEDRAL, EDINBURGH.

This photograph, one of four on view at the Exhibition of the Royal Academy this year, shows the west end of this chapel, with the King's Stall in the centre. We shall at an early date give one of the other views, illustrating the stalls on the north side in detail. The east end, both inside and out, was illustrated in our pages on July 21, 1911, when the King opened the building, and at that time we gave a plan of the cathedral and other views in illustration of Sir Robert Lorimer's beautiful building, including a view from Parliament Square, looking north-east. A rather full description will be found in the same number. The woodwork carving was by Messrs. W. and A. Clow, of Edinburgh, and the stone carving throughout was done by Mr. Joseph Hayes, of the same city. Mr. John Kennedy, of Edinburgh, was the contractor who built the chapel. All the stalls, of English oak, were executed entirely, like the other woodwork, by Messrs. Nathaniel Grieve and Co., and the stained glass in the east window, representing St. Andrew, is the production of Mr. Douglas Strachan, also of Edinburgh. The heraldic designs were all drawn out full size by Sir Robert Lorimer, A.R.S.A., and completed in stained glass by Mr. Louis Davis, of Pinner. The picture given herewith has not been previously published elsewhere, we believe.

MUNICIPAL BUILDINGS, BATHGATE, EDINBURGH.

The designs for these Municipal Buildings were approved of some time previous to the commencement of the war, but the project was not started owing to financial reasons. Since then the architect has effected some improvements in the scheme. The work, however, cannot be undertaken under present conditions. The architect, Mr. J. Graham Fairley, of Abercorn Terrace, Portobello, has shown the picturesque possibilities of Scottish Baronial Architecture for modern municipal purposes, but the projecting clock in the drawing seems to us rather large in its present shape, which could be easily modified in execution.

HOUSE AT BALFOUR, TRANSVAAL, SOUTH AFRICA.

Mr. Mostert is a descendant of one of the original Dutch settlers who settled at Cape Town, and his family owned one of the finest houses and estates on the slopes of Table Mountain. The house there had fallen into decay, and was rebuilt by Cecil Rhodes when he bought and incorporated the Mostert estate in his own larger one of Groote Schuur. Mr. Mostert, when he settled down on his farm on the high veld of the Transvaal, wished to carry the reminiscences of the architecture of his old home to his new surroundings on the bare plains of the high veld, which were very different from the rich, wooded slopes overlooking Table Bay. The house is built in brickwork, of bricks made on the farm, covered with white plaster, with its woodwork and solid shutters painted green. It is roofed with a brownish tile, the thatch which adds very much to the beauty of the old Cape homesteads being too dangerous a material to use on the grass plains, where bush fires are common features of the dry winter months. The white walls must necessarily look bare and glaring until the surrounding trees, which add so much to the beauty of the Cape houses, have grown up. One of the chief features of the Cape houses is the symmetrical treatment of the old outbuildings of the farmstead round the central building, but in this case a variety of plans has been attempted in the curved loggias or stoops which connect the wings to the main building. A formal system of tree planting and gardens has been laid out round the house. Mr. Herbert Baker, F.R.I.B.A., is the architect of this most interesting house, and we are indebted to him for the loan of the plan given to-day, with the sheet of four elevations of the house, as well as the part of the forecourt entrance and ends of the wings.

ESTIMATING METHODS FOR THE CONTRACTOR.

(*Continued from page 87.*)

It will be seen that there is a difference of $54.60 on the item of expense alone between the two estimates when first cost is reached, which will be increased if profit is added on a percentage basis. All good estimators will admit that this variation between the two estimates is entirely too great for so small a total amount. It is self-evident that this variation is due entirely to a lack of uniformity in applying the overhead. If the quantities are reversed—productive labour $200, material $340, using the same expense ratios—there is still a difference of $16.80. While this sum is not large in comparison with the total amount of the estimate, it is based solely on one item, and from that standpoint the variation is too large.

Let us look at this difference of $54.60 from another angle: Suppose two men varied in their estimates of $54.60 on the correct amount of material, $200. It is quite evident that someone would be wrong. Is there any more reason why two firms should be $54.60 apart on the "overhead" item of the estimate than they should be on material? If it is essential to have uniform plans and specifications upon which to estimate, is it not also reasonable that there should be some uniformity in estimating methods? This does not mean that every firm should have the same book-keeping system, but that they should approach the cost of doing business and the application of it on the same basis or by the same method. General contractors often express surprise at the great variation in the bids of sub-contractors. While much of this may be due to loose methods, guesswork and mistakes, undoubtedly a large portion is due to a lack of uniformity in applying the overhead.

FORMS OF ESTIMATING.

The forms and practices of estimating and price-making almost defy enumeration and description. These vary from the clumsy, careless, unreliable, all the way up to methods that are as near perfection as possible. These forms and practices all fall under three general systems: Rule of Thumb, Lump Sum, Unit of Labour and Material. The first step is taking the quantities from the plans, etc. The care with which this should be done is too self-evident to need any comment. A permanent record in some form should be made of the estimate; this should be in a book or on make-up sheets. Provision should be made for a comparison when the contract is completed. Estimates should not be made on scraps of paper. If the estimate is too trivial to be well done it had better be left alone.

A few estimating examples drawn from actual business practice will illustrate the proper and improper methods of compiling prices. Although the amounts in these examples may seem small, the principles and methods of correct estimating are the same, regardless of the amount, and it is these upon which the attention is directed. As illustrated above, every profitable estimate or price will be composed of these four essentials:—

Cost of Material	$.....
Cost of Labour	$.....
Expense, Conducting Business	$.....
Cost, or safety point	$.....
Profit	$.....
Price, or Estimate	$.....

The work upon which the following estimate was made was performed on a building in Pennsylvania. The first column is the estimate in condensed form; the second column shows the contract cost:—

	Estimate.	Cost.
Materials (itemised)	$1,119.00	$1,094.24
Labour (productive)	380.00	333.00
Expense, 55 p.c. Productive Labour	209.00	183.15
	$1,708.00	$1,610.39
Profit, 30 per cent.	512.00	
Bid	$2,220.00	
Profit		$609.61
Contract Price		$2,220.00

The completed work shows a good profit, yet this was the lowest of five bids. A study of this estimate shows that every feature of the work was carefully analysed and the computations intelligently put together. Another important feature of this transaction is that the cost of each item was kept as the work progressed. When the contract was completed the estimated and real cost could be compared.

The following estimate is a striking example of the lump sum method. The selling price is the only item named, except labour, for which the time is given:—

	Selling Price.
Material	$130.00
Labour, 4½ days, man and helper	28.00
	$158.80

As these "lump sums" were the only data at hand, and not knowing the real cost, an offer of $144 was accepted. The results of the completed contract were:—

	Cost.
Cost of material (itemised)	$99.86
Labour	22.50
	$122.36
Profit	21.64
Selling Price	$144.00

The profit, $21.64, is almost a delusion. The element of overhead is not included. The overhead was based on productive pay roll, and the real factors were:—

Cost of Material	$99.86
Cost of Labour	22.50
Expense	11.70
Profit	9.94
Selling Price	$144.00

The first estimated price of $158.80 would have allowed a substantial profit. The estimate was compiled in such a manner as to render it impossible to determine the probable cost. If the original estimate had been put up in something like this form—Material (itemised), $99.86; labour, $22.50; expense, $11.70; profit, $23.94 = $158.00—it would have been seen at glance that the price could not have been cut to $144.00.

A large percentage of contractors who figure to make a profit do not make a third or a fourth of what they estimate, while many lose money on contracts without knowing it. Most of this is due to bad estimating and failure to check up the cost of each completed item with the estimate. This is particularly true of small work. Here is an example of a loose estimate lump sum for $80, which was named for the selling price.

After the selling price was named the make-up worked out was:—

Materials	$51.00
Incidentals	5.50
Labour	24.00
	$80.50

RESULTS OF COMPLETED CONTRACT.

Materials	$46.25
Labour	20.00
Cost	$66.25
Profit (supposed)	13.75
	$80.00

The expense of conducting business, or overhead, on this job was $10; calculated on the productive labour methods, the real profit was, therefore, $3.75.

This estimate is faulty, because the cost of material, expense, and supposed profit are lumped together instead of being separated. How much more intelligent this estimate appears when put together, as it really should be:—

Cost of Materials (itemised)	$46.25
Cost of Labour	20.00
Expense	10.00
Cost	$76.25
Profit	3.75
Selling Price	$80.00

Probably the most surprised of all in this transaction would have been the compiler of this estimate, in lump summing it, to learn of the narrow margin of $3.75.

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The lump sum method shows nothing but the selling price, and cannot be commended for accuracy or profitableness. It is an easy method, but deceptive, because the selling price is not analysed into its component parts. The amounts allowed for material, labour, incidentals, overhead, and profit are not shown. The price named is not developed out of an experience and accounting, but because the amount named seems to be the prevailing price. This class of estimates is used because the price has been fixed, either by competition or some other circumstance, it being assumed that the cost of performing the work would be less than the selling price. Another undesirable feature is that the one who estimates by the lump sum method does not generally keep a record of the cost of each contract, and has no means of determining whether there is a gain or a loss. While the amounts of the above illustrations are small, the principle is precisely the same for estimates of any size.

The unit method is the most accurate estimating system; its value consists in detailing every unit of material and labour required. It also lessens the chance of omissions, underestimating, and other errors. It consists in taking each part of the work as a unit.

This system adapts itself very readily to nearly all lines of building work. For instance, the number of feet of conduit for electrical work, flooring, or roofing can be considered as a unit. The cost of this material and the labour of installation completing the unit makes the estimating comparatively easy and accurate. This system is more accurate in taking work from the plans, as different portions can be checked against the work shown on the drawings. Another feature in its favour is the ease with which the estimated cost and real cost can be compared. This method takes a little more time, more painstaking, more detailed work than the lump sum, but estimating is too vital a part of the business to be slighted or lumped because somebody is in a hurry.

AN ESTATE SAWMILL.

In the July issue of the Royal English Arboricultural Society's *Quarterly Journal of Forestry* appears an article entitled "An Estate Sawmill," by Colonel G. F. T. Leathen, of Middleton Hall, Belford, which advocates the establishment of such a mill on every considerable estate, and declares that two or three hundred pounds laid out on an estate sawmill will pay hand-over-hand, even if the timber is for estate consumption only. He proceeds :—

The landowner who tries to sell his trees standing, or, worse still, cut or blown, finds himself entirely in the hands of the wood merchant. That worthy heavily discounts the varying demands of the timber market, the difficulties of transport and labour, and the chances of accident to men and horses. He will, therefore, only offer a rubbish price for the timber, and knows that his brothers in business will do the same if approached. As a matter of fact, the timber merchant knows his business, and the troubles he pours into the ear of the timber owner will not bear examination. . . . Now, if the landowner would only become his own middle-man we should hear less of the unprofitableness of timber. It has paid in the past, and it will pay even better in the future, especially if the Government can be induced to reimpose the duty on imported timber that was taken off with such disastrous results to the home timber-grower in the 'sixties. I have heard it stated, and rightly, too, that the timber merchant is in touch with consumers and the landowner is not. My reply is, "Form your own connection." This, of course, cannot be done at once, but should be built up by degrees, by supplying cart timber, cut to requirements, to the local cartwrights, fencing to the neighbouring landowners and farmers, and firewood to the cottagers. Another difficulty is to find out what prices to charge. This can easily be done by inquiring for the article as a would-be purchaser, and then knocking off a liberal discount.

Most large estates having sawmills have a fixed central mill, driven by water or steam, and one or more portable engines. These used to be of the traction-engine type; but the portable oil engine driven by petroleum is becoming more popular. Little need be said of this portable engine, which is moved, of course, from one site to another as it is required; but it may perhaps be of interest to describe more fully the fixed central sawmill. It is very essential that the situation shall be as central as possible to the estate woods. It should have good roads from it to the woods and to the railway station. So much depends on the local conditions that I will content myself with describing the growth of the mill that I have known nearly forty years. When I first knew it the estate this mill served had a lot of young plantations, about twenty years old. There was in consequence not much timber coming to the mill, and most of that which did come was cut up into fencing. The power was derived from a 16-foot overshot iron water-wheel, which developed about 8-h.p. It was mainly run on wet days when the woodmen could not work in the open. The water was supplied from a small ornamental pond, which ran dry in about four hours, unless there was a flood on. This mill ran on an average two half-days a week, and cut up all the fencing used on the estate. Nothing much was sold. As the woods increased in size this mill could not cope with the work, and a good deal of timber was sold to merchant standing. At the same time there was a demand from farmers and others that it became increasingly difficult to supply. It was therefore decided to take out the old wheel and instal a double vortex turbine. There was only a 27-foot fall, but the horse-power was increased from 8 to 10-h.p., whilst the economy in water allowed the mill to run all day six days a week. This turbine, in addition to driving a 3ft. 6in. saw, worked the pumps for a creosoting plant, also a band-saw for cutting out cart timber. There was no difficulty in selling all the wood cut up, especially as a demand for creosoted timber arose. In fact, a very nice little connection was worked up, which in time paid all the woodmen's wages and enabled the estate fencing to be supplied free.

In the meantime the woods were coming on, as a good re-planting programme had been carried out. A break of about ten acres of nice ash was due for cutting, and it was evident that the 10-h.p. saw would not be able to tackle it. The question therefore arose as to whether a contractor should be employed to convert the wood, or whether it would be better to put in a larger mill. On going carefully into figures it was found that the cost of hire of engine and extra labour would come to about half as much as the cost of erecting a new 40-h.p. suction gas-power mill. The first alternative would show nothing for the cost when the work was completed, whereas the 40-h.p. mill would be very useful in the future, whilst the timber would be better and more carefully cut up than by contract. It was decided, therefore, to go in for a new mill on a fresh site, so as to have the use of the turbine mill whilst the new one was erecting, and later on as a stand-by. After inquiries of, and estimates from, various firms, it was decided to go in for a suction gas plant, using sawdust as fuel. This plant was more or less a novelty at the time, and there was some hesitation about adopting it. A suitable site for the new mill was found near the old one, and a light tramway was laid from the saw bench to the creosote plant. As the suction gas plant would require a good deal of water, the mill was made parallel to a small stream which had a shelving bank on one side and a steep one on the other. The mill was placed on the shelving bank, and in putting in the foundations for the retaining wall it was found that solid rock existed about four feet below the shingle. The whole bed of the stream was, therefore, excavated, and the shingle used to fill in behind the retaining wall, making a dry and level stand for the bench. The concrete block carrying the engine was also founded on this rock, with the result that, after five years' constant work, there is not a vestige of a shake in the engine, which develops nearly 50-h.p. A cement dam was built across the burn to maintain the supply of water, as in summer it is apt to be low. The well for the pump was connected with the stream, care being taken to filter the water through two fine gauze screens. . . .

The suction gas plant was placed in a two-storeyed tower, so that the top of the hopper appears through the floor above. An apartment below is used as a store for sawdust, which is placed in sacks and drawn up through a trap door and stored in the room above. Here it dries, and is handy for charging the hopper. The engine, which is in a separate room to the plant, is of the usual gas-engine type. The saw-bench is in a creosoted wooden shed with a continuous window on the stream side and entirely open on the yard side. The travelling bench runs right out at the end of the shed alongside and level with a platform. This table bridges the burn, and on the opposite high sloping bank a wooden incline has been fixed, down which logs are rolled as required from the flat ground above where they are deposited by the carters. These accumulate on the platform, and are drawn on to the bench, as required by the sawyers, with "Canadian cant hooks." By this plan the largest tree can be put on the bench by two men, and one of the chief troubles of a small sawmill is thus obviated, viz., the necessity of having help at hand to lift "a big stick" on to the bench. A pendulum cross-cut saw is fitted at the entrance end of the shed, and a scale of feet on the standing part of the bench enables the sawyer to cross-cut a log placed on the travelling bench to any length required without using a measuring rod. This scale is marked "zero" at the cross-cut saw, and extends outwards both ways. This mill is fitted with many small labour-saving devices, and is run by a man and a boy on the saw and a lad to look after the engine and lend a hand when required. The engine can be started from cold on Monday morning in ten minutes, or even less. When first installed, people said the mill would clear up all the wood on the estate in a year, but somehow there appears, after five years, to be lots to do yet. With the present prices of timber, this mill has paid for itself in the course of the last twelve months.

TIMBER RATIONING AT WORK.

Timber and Wood-Working Machinery believes that the Controller will find he has greatly under-estimated the work in connection with the distribution, and that he has rather light-heartedly launched a scheme for the efficient administration of which there will not be ample provision. If the scheme in itself stands the test of experience and proves workable—and our contemporary thinks that it should do so, provided the executive machinery is adequate—it will still involve the expenditure of a vast amount of work directed by expert knowledge. And, even if this expert knowledge is available, it fears the centralisation of so much detailed work must involve many irritating delays.

THE EVILS OF CENTRALISATION.

This is the great drawback to all Government State Control. The officials do not realise the immense amount of work they are undertaking, and the practical impossibility of dealing rapidly and efficiently from one central office with such a vast concern as the trade of the country. In the timber trade, especially, such remarks apply; for although the Controller has been generous in a way, and has evolved a plan whereby the old-established firms can keep their business alive, yet he has practically taken all the work on his shoulders. What this means he will in the course of time discover, and whatever the ability of his staff, he has undoubtedly a very difficult task. We are quite aware that many experienced men in the timber trade are employed, but their trading abilities have no scope under a system of centralisation such as that which is being adopted. However, we can only hope for the best.

QUANTITY, NOT QUALITY.

The rationed quantities are already being dealt with, of course, under a strict system of permits; and the procedure under the new Order is not very complicated. Old connections in the trade are, however, being upset, and some curious changes may take place during the continuance of the present condi-

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tions. For instance, the rationing is entirely on the standard basis. Quantity only, not values or the description of wood, is taken into account. Whatever the nature of a merchant's previous trade, he receives so much in quantity, without any reference to the particular class of wood in which he may have traded. The developments will undoubtedly give rise to some heart-burning. A firm, for example, which turned over a large quantity of staves, firewood, wrack or ends, receives a ration as large as that which is allotted to a firm which dealt in, say, expensive Archangel or Swedish deals and battens. Any firm, therefore, with a ration may trade in any description of wood, even though it has previously had no experience. Only customers with a permit are necessary. To those who formerly dealt in the more expensive kinds it seems hard that they should receive no more than is allotted to others who, as far as money is concerned, had a much smaller turnover.

THE PERCENTAGE OF PROFIT.

But in a sense this anomaly may right itself. The profit allowed is per standard, not per cent. If a merchant having a ration buys, from the Government, wood which costs him £50 or more per standard, he has obviously, by paying out a good deal more cash, to run a greater risk than the firm which deals in the cheaper wood at, say, £40 per standard. And he receives a smaller percentage on his capital. There is thus no particular inducement for a firm accustomed to a trade in common unassorted or fifths to endeavour to get orders for firsts and seconds; rather the reverse.

THE RETAILER'S RATION.

Another point which is exercising the minds of some merchants is the obtaining of a portion of their ration for retail purposes. There is often no strict dividing line between a merchant and a retailer. Many of the largest merchants have retail yards, and while the greater part of their sales will be above the £5 limit, and will be executed by means of permits, yet they will need a portion of their ration to keep their yards going. It is only retailers who are to be allowed to stock, but it is believed that some provision is being made to meet this difficulty.

THE PERIOD OF THE FIRST RATION.

Much curiosity is being expressed as to the length of time which will elapse before the next ration is issued. The Press announcement made a month or so ago mentioned six months as the period for which the first ration would be issued. But from the manner in which the ration circular has been drawn up, it would appear that no definite period has been decided upon, and the hopes of the trade are naturally excited. 100,000 standards have been released from the national stock. The trade knows very well that the annual consumption is far larger than 200,000 standards, and it knows also that there are limits to the expansion of the home-grown business. It is naturally hoped, therefore, that the importations will be on such a scale as to admit of another ration in less than six months' time.

Mr. O. Claude Robson, engineer and surveyor to the Willesden Urban District Council for over forty-three years, has resigned owing to illness, and been appointed consulting engineer at a salary of £600 per annum.

At a mass meeting of the Operative Plumbers of Edinburgh and Leith, held last Wednesday, it was reported that the employers had agreed to grant the request of the men for a 12½ per cent. advance, and thereby bring them into line with the other branches of the building trade. The advance begins from last Thursday, and will be paid on all private work.

At a meeting of Archdeacons and Rural Deans of the Norwich diocese to appoint a diocesan surveyor in succession to Mr. Herbert J. Green, who died on May 31, the candidates for the position were Mr. E. P. Rennie, Mr. Charles J. Brown, Mr. J. E. Burton, Mr. Ernest E. Colman, Mr H. C. W. Blyth, Mr. E. J. Tench, and Mr. Carnell. On a ballot being taken, Mr. C. J. Brown secured the largest number of votes, and was elected. It had been previously decided that appointment to the office, instead of being for life as hitherto, should be for five years in the first instance.

THE NATIONAL FEDERATION OF BUILDING TRADE EMPLOYERS.

BIRMINGHAM MEETING.

The National Federation of Building Trade Employers held its half-yearly meeting at the Grand Hotel, Birmingham, last Wednesday, under the presidency of Mr. Henry Willcock, of Wolverhampton.

The Lord Mayor said after the war, builders would have to direct attention to the question of the supply of more houses of the working-class type. In the past private enterprise had been responsible for nine-tenths of the houses. The Birmingham City Council the previous day had adopted a policy to make good the shortage of houses in the city. The corporation would have to provide a programme for building houses at the rate of 5,000 a year for twenty years if they were properly to house the citizens. The questions presented were: Who was to undertake that great work, and how was it to be carried out? There were people who had boldly said that they thought that the only way to satisfy the demand was by State agency or municipal control. For his own part, he had never wavered in his own opinion that it would be a mistake to undertake, either nationally or municipally, the supply of houses until the fullest opportunity had been given to private enterprise of doing the work. "I recognise," added the Lord Mayor, "that business men are engaged in trade for the purpose of making a profit, and that every man is entitled to receive a fair and just recompense for the investment of his capital and his business enterprise. It is only by recognising that fact that we can produce the best results for the country. The same principle applies to those who are in the position of workmen: You will not get the best out of the workman unless you pay him a reasonable wage. But at this period of the war, when the country is fighting for its existence, it ought not to be a mere question of making a profit or of earning abnormal wages. We owe a duty to the State, and every individual in this country, master or man, should recognise that his duty is—first, to his country, and to himself afterwards."

To the Lord Mayor a vote of thanks was passed on the motion of the President, seconded by Mr. G. Elvins, of Birmingham (President of the Midland Federation).

Congratulations were extended to Lieutenant-Commander P. T. Dean, a member of the Blackburn Association, who had been awarded the Victoria Cross for gallantry in the Zeebrugge expedition. A Lancashire delegate stated that Lieutenant-Commander Dean, V.C., was likely to be the Unionist candidate for Blackburn in opposition to Mr. Philip Snowden, and he added, amid applause, "We all wish that he may pull off the double event."

Approval was given to a report of the Housing Committee, which recommended the repeal of the Finance Act (1909-10) (Part I.) to restore confidence in building as an investment; and the amendment to the Rent and Mortgage Act (1915), so as to enable the owners of property to increase the rent to cover the increased cost of repairs and the general increase in the rate of interest. The abolition of the present system of rates covering local (and national) expenditure, and the substitution therefor of some method of local income-tax to cover local expenditure, all national charges being borne from the national income, was advocated. It was suggested that the basis of such local taxation should be widened, so as to reach many persons, not being "occupiers of property," who now escaped contributing to local expenditure for amenities they enjoyed.

MILITARY SERVICE QUESTIONS.

The following telegram was received from the National Service Department:—"Instructions have gone out to all regions that under certain conditions men of new military age in building trades are not to be called up for military service. New list will be out in August."

Mr. A. J. Forsdike, Sheffield, said he did not think the telegram was worth the paper it was written on. It was a method of juggling, and in the meantime they were losing men of vital importance to the trade. He thought they should call the serious attention of the Department to the fact that pivotal men in the employ of builders were being drafted into the employ of engineering firms, where they were protected from military service.

Mr. Henderson, Port Talbot, said he had evidence of the fact that men were now being called up from the building trades, despite the telegram. Moreover, it was passing strange that Government contracts should be placed in South Wales with Scottish firms, the local firms not having been asked to tender.

On the motion of Mr. Moffatt, Birmingham, a resolution was passed expressing regret at the serious delay in the issue of the certified occupations list, and asking for the immediate issue of the advance copy of the list in relation to the building trade, as promised to a deputation on July 5, with the ages as then tentatively agreed.

A further resolution deputed a committee to approach the Special Occupations Committee with regard to the protection of men engaged in the building trade.

Another resolution referred the whole question of military service to the Industrial Council for the Building Industry, which meets to-day, with a view to obtaining joint action by employers and operatives representing the whole country towards a settlement of the serious position existing in the building trade and obtaining recognition and treatment equal to that being accorded other trades.

GOVERNMENT GRANTS FOR HOUSING SCHEMES.

The Midland Federation submitted the following resolution, which was carried:—

"That, in consideration of the promise made of Government support for housing schemes, the National Federation be asked to approach the Local Government Board, and request them to arrange facilities to be granted to private enterprise in the erection of the houses for working classes now under consideration, and that it is desirable that the National Federation should prepare a scheme outlining how such assistance can be given."

Several speakers urged that the housing problem was one of the greatest before the country, and one which would have to be dealt with as a reconstructional measure.

With reference to the question of bonuses granted during the war being merged into the standard rate, the Executive Committee's recommendation, that such a step "was most undesirable," was agreed to.

OBITUARY.

Mr. Horace Porter, M.A., F.R.I.B.A., whose death we briefly announced last week on page 84, was educated at Uppingham and Trinity College, Cambridge, where he rowed in the First Trinity 4th boat, and was in the front rank of players at both tennis and lawn-tennis. Later, as Captain in the 3rd Kent V.A., he was winner in the Position Officers' Team Competition of the N.A.A. in 1894, 1895, and 1896. For many years he was well-known in amateur circles as a keen and sound violin-player. He married, in 1901, Mary, youngest daughter of the late C. P. Bidder, Q.C., of Mitcham. He studied architecture under his father, the late Mr. F. W. Porter, F.R.I.B.A. Besides important private work, Mr. Porter and his father occupied in succession the post of architect and surveyor to the Sun Fire Insurance Office for just over 50 years, and that of surveyor to the Clothworkers' Company for about the same period. Father and son alike passed the chair in the Saddlers' Company—F. W. Porter being Master in 1895-6, and Horace Porter Prime Warden in 1916-17. Mr. Porter was Past Master, and for ten years Secretary, of the Marquis of Dalhousie Lodge of Freemasons, and Past Grand Treasurer in the Mark Mason's Degree. He was one of the original members of the Holborn Borough Council, and Mayor in 1910-11. He died on July 29, at 16, Russell Square, where he was born in 1861.

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THE STATE AND WAR DAMAGE.

A meeting of the Committee on War Damage was held in the Hall of the Brewers' Guild, E.C., on Wednesday last, under the presidency of Sir Stephen Penfold, Mayor of Folkestone. The letters of regret at non-attendance included several from representatives of the Churches. Cardinal Bourne, Archbishop of Westminster, wrote :—

"Owing to my absence from London last year I was unable to take any part in the representations made to the Government on the question of war damage. Unfortunately, owing to a long-standing engagement, I am not able to be present at the meeting to-morrow. I trust, however, that the renewed representations which will then be made to the Government will meet with complete success."

Mr. Mark H. Judge, Chairman of the Committee, read correspondence which has passed between the Committee and the Prime Minister and the Chancellor of the Exchequer. In a letter to Mr. Bonar Law on July 18 he said :—

On March 26 Mr. Lloyd George expressed his regret that it was then impossible for him to receive the deputation. His Secretary wrote : "If you will write to him again when the military situation is a little less serious, he will be pleased to consider your request. He fully realises the seriousness of the matter you place before him, but he is sure you will understand his position in the present circumstances."

In reply to our renewed application a letter has to-day been received which says : "The Prime Minister has asked me to say that he is so overwhelmed with urgent matters affecting the prosecution of the war that it is impossible for him to give any attention to the question you raise, and he would be much obliged if you would settle it with the Departments concerned."

I now write on behalf of the Committee to ask you, as the head of the Department most concerned in the matter, to be good enough to fix an early date for receiving our Deputation.

I enclose the Report of the Committee, just issued, from which it will be seen that the Committee now represent 842 Municipal authorities, having a population exceeding 32 millions.

The Chancellor of the Exchequer replied as follows :—

I have carefully considered your letter of the 18th instant on the subject of the compensation payable in respect of damage to property from air raids and bombardments. As the Prime Minister has already pointed out, this matter was most carefully considered by the War Cabinet last year, and as a result of their deliberations I was able to announce the decision of the Government in the House of Commons on November 5. The scheme that was then approved represented, in the opinion of the Government, the most satisfactory solution of the question that could be found, and nothing has since happened which would justify any other view. In these circumstances I do not think that a deputation would be of assistance.

The Mayor of Poplar proposed, and the Mayor of Great Yarmouth seconded, the following resolution :—

That we renew our request to the Rt. Hon. A. Bonar Law, M.P., Chancellor of the Exchequer, for an early day to be fixed for receiving our deputation, and that the following statement be submitted :—

The Committee on War Damage contend that all citizens injured in person or estate by air raids or bombardments should be entitled to compensation from national funds. The Prime Minister expressed full agreement with this when he received the Committee on July 13, 1917, but, as yet, the principle has only been given effect to in a very limited degree. The concessions made since the Committeee have been formed are :—1. A reduction of 50 per cent. on the premiums for insurance. 2. Compensation by way of grace for personal injury in certain cases, and (3) since the interview with the Prime Minister, compensation for damage to property in certain cases, up to £500, but only for damage subsequent to August, 1917, that is, after three years of the war.

The Government having taken no further steps towards giving effect to the promise made by the Prime Minister, the following suggestions might be accepted as an equitable basis of settlement :—

Outline of a scheme to give effect to the principle of national responsibility for compensation in all cases of damage to person or estate from air-raids or bombardment.

1. That the Air-raid Compensation Committee be empowered to settle all claims for compensation in respect of damage from aircraft or bombardment not covered by insurance under the Government insurance scheme.

2. That in cases of personal injury, whether resulting in death or disablement, claims shall be submitted to the said Committee, which Committee shall obtain requisite information thereon, and settle the claims with the least possible delay.

3. That claims for damage or destruction in respect of property not insured under the Government insurance scheme shall be submitted to the said Committee, which Committee shall obtain a report on the facts of each case, and the owners shall, with the least possible delay, be compensated to an extent not exceeding £500 in respect of damage or destruction by perils coverable by the Government aircraft and bombardment insurance scheme.

4. Owners of property not insured under the Government insurance scheme, where the damage or destruction exceeds £500, shall, in respect of the amount above £500, be compensated by the Government within twelve months after the termination of the war.

5. The foregoing provisions shall be retrospective, and cover all cases of damage or destruction to person or estate, except in those cases where compensation has already been given or provided for.

6. The Government aircraft and bombardment insurance scheme shall be continued so that all who wish to take advantage of it may thus secure immediate compensation as heretofore. Owners of insured property of an aggregate value exceeding £500 shall be compensated up to that amount without payment of premium thereon.

After a long discussion it was unanimously resolved : "That the meeting be adjourned and it be referred to the Executive Committee to further consider the whole matter and convene another meeting."

THE HOUSING OF THE PEOPLE.

SIR TUDOR WALTERS' COMMITTEE'S REPORT.

The committee which, under the chairmanship of Sir J. Tudor Walters has been investigating the question of housing, has concluded its labours, and some particulars of its findings are issued. Large employers in industrial districts are told they should combine to erect villages, planned on model lines, on the outskirts of towns. Co-ordination of public, private, and public utility society effort is suggested, and a central housing department, with a chief commissioner for England and Wales and one for Scotland, is recommended.

The Committee, it is understood, estimates that the present need for working-class houses in Great Britain is at least 500,000 houses, in addition to which, to meet the requirements of the normal increase in population and to take the place of houses demolished, an annual supply of 100,000 new houses is needed. Towards this shortage local authorities, in reply to circulars from the Local Government Board, have so far expressed their willingness to prepare schemes, subject to substantial financial assistance from the State, for about 160,000 houses in England and Wales, and about 98,540 houses in Scotland.

CO-ORDINATION OF EFFORT.

It is held that a very large proportion of working-class housing must still depend on private enterprise of one kind or another, and unless there is co-ordination of these various activities little will be done in many districts, and rural housing is certain to be neglected because of the difficulty of creating a sufficient local opinion to make the authorities act. It must be remembered also that private enterprise will in the years immediately after the war be conducted under great difficulties, through high prices and the shortage both of labour and of materials.

The Committee are convinced that unless there is some supreme guiding direction an adequate housing programme is not likely to be carried out, but that the shortage of houses for some years after the war will increase rather than diminish. They recommend the establishment of a strong housing department, with an experienced and capable chief commissioner both at the Local Government Board for England and Wales and at the Local Government Board for Scotland. It is suggested that the country should be divided into districts and local commissioners appointed, who should work under the central control and yet have executive powers vested in them.

VILLAGES FOR WORKING CLASSES.

In the view of the Committee there is great scope in housing for public utility societies, which should be an important auxiliary to the work of the local authorities. The grouping of large employers in the industrial districts for the erection of villages on the outskirts of towns, planned on modern lines, would be a great boon for the working classes, and would have the advantage of being carried out in the form of complete schemes rather than the present unsatisfactory method of rows of gloomy cottages surrounded by factories and works. Public authorities as well as the tenants should be represented on the boards of management of such societies. The limitation of dividend upon the share capital, which is a condition of the formation of public utility societies, prevents any exploitation of the tenants, and renders all surplus revenue, resulting from good management, available for promoting the amenities of the villages.

There should be uniformity of method applied by local authorities and a free exchange of opinion between them, so that the experience gained may be available to all. The Committee also think it most important that the building of working-class houses should be undertaken by the smaller builders employing local men, while in any priority schemes set up by the Government for controlling the supply of building materials a privileged position must be given to housing schemes.

ACQUISITION OF LAND.

The Committee consider that the whole question of land acquisition for working-class dwellings by public authorities and the legislation under which it is at present carried out needs careful consideration and revision, both as to economy in price and for the purpose of avoiding unnecessary delays. Where compulsory acquisition is necessary it is suggested that the special powers conferred upon State Departments by the Defence of the Realm (Acquisition of Land) Act, 1916, might with advantage be vested in the Housing Department for a limited period of years, until the general powers of local authorities as to land acquisition can be resettled upon a more satisfactory basis. It is further suggested as worth consideration whether local authorities might not supplement their own building operations by laying out suitable land, providing roads and sewers, and leasing it for private building schemes of an approved kind.

The Committee has taken a great deal of evidence on the planning and construction of workmen's dwellings so as to secure the fullest economy while giving the maximum of accommodation and convenience, and they give many valuable suggestions, illustrated by plans and diagrams. They also suggest a stabilisation of the trade of house-building by definite programmes extending over, say, ten years, and the erection of a better-class of house, which would offer more regular employment than in the past and attract good workmen who would take an interest in their work.

A committee has been appointed at Perth to further the proposed restoration of St. John's Church as a memorial to Perthshire men who have given themselves to the country in the present war, and more especially as a memorial to those who have given their lives.

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Correspondence.

UNITED STATES AND BRIBERY.

To the Editor of The Building News.

Sir,—The Federal State Commission has recently submitted a special report on commercial bribery to the Congress of the United States, in consequence of which a Bill was drafted, which has been read twice in the Senate.

The full text of the report and of the Bill ("to further protect Inter-State and Foreign Commerce against Bribery and other corrupt Trade Practices") is given in the current "News-Sheet" of the Bribery and Secret Commissions Prevention League, Incorporated, and I shall be pleased to send a copy of this to anyone interested.

Not only in the United States, but also in the United Kingdom there is a steadily growing movement against "graft" and secret commissions of all kinds, shown as regards this country by the fact that nearly 200 new members have joined the League this year.

Yours, etc.,

The Secretary.

9, Queen Street Place, E.C.4.

PROFESSIONAL AND TRADE SOCIETIES.

Central Land Association.—The annual meeting of the Central Land Association was held on Wednesday at the Surveyors' Institution. Lord Selborne, who presided, said that apart from any question of political attack, the mere pressure of taxation would be such as to make the position of agricultural landlords, who had no private means, except their land, and who did not farm any of their land, an extremely difficult one. He thought there would certainly be a concerted attack after the war upon agricultural landowners on the part of the Socialists. He was quite sure that as a class the agricultural landowners could render great service to the State during the period of reconstruction after the war, by bringing their experience and their knowledge to its service in all those problems which affected country life. Lord Desborough said that, under the Corn Production Bill, now before Parliament, power was given to acquire land, without notice, for allotments and small holdings. That, he thought, was a very dangerous position, inasmuch as the Board of Agriculture, who had the powers, had delegated them to smaller local bodies, who were inexperienced in agricultural affairs. These bodies would have power to keep the land thus acquired for two years after the war, and, by arrangement, for three years more. He strongly urged that the right of appeal should be given. It was resolved to change the name of the association to that of the Central Landowners' Association.

The Professional Association.—A newly-formed society, "The Professional Association," has been started to provide a central organisation for the discussion of matters of professional interest in H.M. Office of Works; and to safeguard the professional status of the members and to promote their interests. Members comprise every person on the Register on October 15, 1917, and every person so elected thereafter. A candidate for election must be employed in H.M. Office of Works and engaged on professional duties connected with the Department, and must have passed the relative Civil Service Examination, or shall satisfy the Council that he has had suitable education as an architect, engineer, or surveyor. Heads of divisions and their deputies are ineligible. Subscriptions are 10s. 6d. per annum. The President is Mr. G. J. T. Reavell, A.R.I.B.A., and the Hon. Secretary Mr. H. A. Dives; the address is Storey's Gate, Westminster.

On October 23 the Queen will lay the foundation-stone of the extension of the Hampstead Garden Suburb Institute, made necessary by the rapid growth of the kindergarten, art, and high schools. The building, designed by Sir Edwin Lutyens, will be begun on the central square after the war. The estimated cost is between £30,000 and £40,000.

Our Office Table.

At the Central Criminal Court last Wednesday, before Mr. Justice Lawrence, the trial was concluded of William Lawson Peacock, 68, Harry Wallis, 47, and David Croal Thomson, 62, picture dealers, all on bail, upon the indictment charging them with conspiring together to defraud the King of money due for income-tax on the business of Wallis and Son, Pall Mall, and for super-tax. After the midday adjournment, counsel for the defence intimated that, acting on their advice, the defendants would withdraw their plea of "Not Guilty." Mr. Justice Lawrence said that the defendants must recoup the Government for the deficiency which had been the result of these misstatements, and, in addition, they must each pay a fine of £2,000 and the costs of the prosecution. The amount of the deficiency was £10,000, and with the fines made a total of £16,000. His Lordship allowed the defendants until September 10 to pay the money, admitting them to bail until then.

The lady almoner at St. Thomas's Hospital in her annual report states that with a few notable exceptions—as in the Duchy of Cornwall Estate—the houses from which the hospital draws many of its patients are absolutely unfitted for human occupation. Within a few minutes' walk are streets of small houses that ought not to exist. Some of the rooms would be unfit even for cattle. There is hardly a dwelling in Lambeth with any provision for keeping food. Shelves and cupboards do not exist, and nearly all the lavatories receive their sole light from the door, which sometimes opens on public stairs or dark passages. Often all the water has to be carried up many flights of stairs, and there are no baths.

The Prime Minister has informed Mr. Gershom Stewart, M.P., that, though at present he is overwhelmed with urgent matters affecting the prosecution of the war, he intends as soon as he has time to spare to consider the scheme of a tunnel to Ireland. Plans for such an enterprise are in existence, and were laid before the Government twenty years ago. Mr. Stewart had written to the Prime Minister stating that as a result of a recent visit to Ireland he had come to the conclusion that the construction of a tunnel would be one of the most powerful influences possible of putting an end to the disputes and misunderstandings between the two countries.

At the first annual meeting of the Industrial Council for the building industry, held at the Grand Hotel, Birmingham, last Thursday, protests were raised against the drafting into the army of men in the building trade who were unfit for soldiering and were more useful to the country at their own work. Mr. A. McDougall (Glasgow), representing the operative bricklayers, remarked that every trade claimed the same privileges of exemption, and he did not think the building trade had been ignored more than any other by the authorities. Mr. H. Potter (Birmingham), Navvies' Union, pointed out the incongruity of asking on the one hand that the war should be continued until a definite result was reached, and on the other hand asking that all their men in the building trade should be exempted. Every trade union was asking the same thing. Mr. Cameron (President of the Joiners' Union), Manchester, said that the building trade had been drained more than any important industry in the country. If the Government continued this policy all the important building work would be brought to a standstill. Ultimately the following resolution was passed unanimously:—"That this Industrial Council strongly protests against the action of the authorities in their treatment of the building industry as a whole, and in the national interests urges Sir Auckland Geddes and Mr. Winston Churchill to receive a deputation at once to voice the views of this Council with the hope that the present unsatisfactory position may be placed on a better and sounder basis."

The Birmingham City Council on Tuesday week approved the report of the Housing and Town-planning Committee, embodying the principles on which it is urged the housing problem should be dealt with. It was considered that facilities should be given to the corporation to buy land without being under present disabilities. It is proposed to put proposals before a departmental committee which is to inquire into the question of assisting private enterprise. Mr. George Cadbury, jnr., the chairman of the Housing Committee, in particular, urges the desirability of promoting building by public utility societies. He says if powers can be obtained to this end, if they can persuade the Government to bring the operation of such societies within their scheme of subsidies, he is of opinion that there will have been accomplished one of the greatest reforms in housing it would be possible to conceive.

At Chester Consistory Court, last Thursday, the Chancellor refused to grant a faculty to erect a font-cover of antique Italian work, with surrounding iron structure for lowering and raising it, in the historic church of Nantwich, on the ground that it would not be in keeping with the architecture of the church. The Chancellor had adjourned the case to take the opinion of an advisory body he had requested the bishop to nominate. The bishop appointed Bishop Browne and Sir Martin Conway, who reported that the style and tone of the cover conflicted severely with the style and tone of the church, and that the proposed erection of wrought iron was out of harmony with the cover, the font, and the church. The proposed font-cover was offered as a gift by an anonymous donor as a memorial of Nantwich men who have fallen in the war.

Considerable interest was aroused in the enquiry held at Chiswick Town Hall, when town-planning schemes of the Chiswick and Barnes District Council relating to 184 and 213 acres respectively were discussed before Mr. G. L. Pepler, F.S.I., Local Government Board Inspector. Mr. W. Allen, who represented the Duke of Devonshire, took a preliminary objection that the land now in question was the subject of a Bill now before Parliament, whilst no active local steps had been taken since 1914 or 1915, but the Inspector said the points had been settled by the Board, and they would proceed. Mr. E. F. Collins, for Chiswick, said twenty years ago there was a proposal to lay out a garden city, to be named Burlingwick, but it was abandoned for reasons mainly financial. After the defeat of the former Gas Company's Bill of 1914, the Council endeavoured to get a lease from the Duke's advisers, with a right of purchase, but the negotiations had no satisfactory result. Mr. Allen cleared away a misconception that 26 acres on the eastern side had been sold to Messrs. Mason, who had agreed to a portion of the land being handed over to the Council on terms. In 1917 the Council agreed to the scheme being held in abeyance and the Duke's agents had kept to that. The Inspector having intimated that other lands ripe for development could not be added now, Mr. Collins said the estimated population in 1914 was 40,000 together with 8,000 men with the Colours, and the rateable value £285,000. Mr. Edward Willis, engineer and surveyor to the Council, said the cost of levelling would increase the cost of building small property. For large flats he thought it would pay abundantly. Mr. Warwick H. Draper supported the applications on behalf of the Chiswick Residents' Association. Mr. Allen, in opposition, said the application was unique in that they were dealing with land in the ownership of one person, and it was perfectly obvious that what the Chiswick Council wanted to do was to prevent that owner using it for industrial purposes, and evidently they really wanted to prevent the development of this land for many years to come. It appeared to him the scheme was put forward wholly in the interests of some better-class residents, whom it was hoped in the future to induce to come to Chiswick. He submitted a primâ facie case had not been made out. Mr. Draper and Mr. Collins also addressed the Inspector, who reserved his decision.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House.
Arundel Street, Strand, W.C.2

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OUR ILLUSTRATIONS.

"Court Lodge," Udimore, and "Court Lodge," Groombridge, Kent. View of the old house and views showing its re-erection in Kent. Etching of the former by Mr. H. Sheppard Dale, A.R.P.E., and photographs of the latter by Mr. D. J. Johnson, of Tunbridge Wells.

Photograph of the model shown at the Royal Academy of upper part of the Australia House, Strand, London. Messrs. A. M. Marshall Mackenzie, LL.D., and A. G. R. Mackenzie, FF.R.I.B.A., Architects. Mr. Bertram Mackennel, A.R.A., Sculptor.

Crathorne Hall, Yarm-on-Tees, Yorkshire. Elevation, section, and ground plan. Messrs. Sir Ernest George, R.A., and A. B. Yeates, F.R.I.B.A., Architect.

Currente Calamo.

No wonder the deputation of members of both Houses of Parliament were disappointed with the extra douche of cold water Mr. Hayes Fisher flung on their very modest plea for an enlarged Government housing scheme after the war. They declared that, although the scheme embodied in the circular to local authorities would doubtless lead to the erection of a certain number of houses, it was inadequate to meet the urgent needs of the situation. Mr. Herbert Samuel, who introduced the deputation, said they desired to emphasise the need for framing financial assistance so as to include public utility societies and encourage other forms of private enterprise. Public opinion demanded a large housing scheme, and many of them felt that the Government were not dealing with the matter with sufficient energy. Mr. Hayes Fisher said the policy of the Government was embodied in the circular of March 18, and local authorities could not expect any material modification in the terms therein offered. Lord Salisbury asked if the proposal was not fatal to the co-operation of public utility societies. Mr. Hayes Fisher replied that equally fatal, he was sure, was the proposal of the deputation involving a grant of 30 per cent. to the private builder. No House of Commons would agree to give that.—Mr. Herbert Samuel said that the statement of the War Cabinet seemed in effect to be negative, and therefore the deputation was disappointed.—By this time one would have thought any deputation hoping to stir up the Local Government Board or the Government to practical recognition of the real needs of the time would have come to the conclusion that "Blessed is he that expecteth nothing."

The seventh report of the Committee of Public Accounts, issued last Thursday, confirms every word we have said before, and elsewhere this week, about the rotten system by which the Ministry of Munitions has wasted millions. In respect of loans to contractors, the Committee were informed that claims for interest are now, as a rule, sent within a week of the due date. It was reported to the Committee that the system of paying for supplies at provisional rates to be adjusted subsequently by negotiation was necessarily continued, particularly with regard to contracts for guns. Regarding the capital expenditure of £66,000,000 on national factories, the Committee state that the Treasury had sanctioned lump sums to be spent on the erection of factories as units or classes upon estimates furnished by the Ministry. In many cases the original estimated cost was largely increased, in some cases to three or four times the original amount, whilst the total sum sanctioned by the Treasury for certain classes was also exceeded. This was done without prior Treasury sanction, although covering authority was obtained after the expenditure had been incurred. The Ministry had not thought it necessary to consult the Treasury upon individual variations; but the practice has now been altered, and no estimate can be increased without Treasury sanction when the cost of the alteration amounts to £50,000. The Committee "trust that every endeavour will be made to secure the working of the Ministry's housing schemes, on which the total capital expenditure to October 31, 1917, was £1,150,000—on the most economical basis consistent with efficiency, and they are of opinion that greater co-ordination of control might be attended with beneficial results." A very mild way of putting things! The sort of "trust" calculated, indeed, to raise a "smile" on the faces of those who have with impunity defied, and *will* defy, all checks on their defiance of economic control till some of them are dealt with in sterner fashion!

In further confirmation of our strictures on the prodigal wastefulness of the Army Council on unnecessary buildings, the eighth Report of the Select Committee on National Expenditure, just issued (Parliamentary Paper 111) should be carefully studied, especially the section dealing with the inquiry made into the necessity for the depot which it is proposed to establish at Slough as a motor transport warehouse and repair workshop at a cost of over a million pounds. This depot is intended for the use of the War Office and of the Air Force, and to meet the needs of the present time, of the period of demobilisation, and of after-war conditions. The Committee state that it is not within their province to consider how far objection was properly raised to the site selected on the ground of interference with food production, but they examine in some detail the case for the establishment of a great central depot, and, having considered possible alternatives, they say that the need appears to have been fully made out. Much waste, indeed, would have been avoided had the repair workshop been established long ago. Owing to the absence of repairing facilities, new lorries and cars have been manufactured and brought into use while serviceable vehicles, needing only a fraction of the labour to be put into order, are standing idle in thousands. Great extravagance in labour, material, and money has resulted. The Committee commend Major-General Crofton-Atkins, Director of Supplies and Transport, for his foresight and persistency in pressing forward the proposal for a central depot. They urge caution, however, with regard to the scale on which the depot is built, for "if the end of the war appeared to be in sight, the situation would be completely altered." No important section can be used till some months have passed, and the Committee hope that the Army Council will "keep a careful watch upon this important undertaking, with a view to restricting its scale to more modest dimensions if any change of circumstances renders a smaller establishment sufficient for the immediate necessities of the case. It ought not to be completed, in our opinion, in accordance with the present very extensive plans for the sake of post-war conditions alone."

A very valuable preliminary report has been issued by the Water-Power Committee of the Conjoint Board of Scientific Societies, which was appointed to ascertain the amount and distribution of water-power in the British Empire. The results of the inquiry are described as at once encouraging and disappointing. Encouraging, because the ascertained resources are enormous; disappointing, because, with a few exceptions, nothing has been done on any systematic basis to ascertain true possibilities. The committee recommends the Government to bring before the notice of the Governments of the various units of the Empire the need for investigation, and to form at once an "Imperial Water Board," including representatives of the Dominions and Dependencies, to investigate, advise, and recommend suitable action. Such a Board would be able to take a broad and comprehensive view of the advantages to

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the Empire as a whole attending the development of any given scheme, and would be able to form a reasonable decision as to the relative advantages of such different schemes as might be brought forward from different parts of the Empire. That since it is unlikely that private capital will be available for many years for hydraulic development on any large scale, powers should be obtained to enable the State to assist or to undertake such development if thought advisable. It is suggested that much might be done to attract private capital if the State, after careful investigation, were to guarantee a suitable minimum interest on the necessary capital, sharing at the same time in any profits beyond the amount necessary to provide that interest. By this method of assistance private enterprise would be untrammelled, and the management of the concerns so assisted would remain in private hands. That undoubtedly would be the right course to pursue, and, if well administered, the investment would in a very few years, in our opinion, prove a mine of wealth beyond the dreams of avarice, and the most perfect safeguard against any world-shortage of food and raw material, including fuel.

Six or seven years ago the Marquis of Ailsa caused search to be made for the gates or doors to the still nearly perfect Gothic doorway that formed the principal entrance to Loch Doon Castle. The castle occupies nearly the whole of a rocky island towards the head of the loch, and the gates or doors, whether of iron or wood or both, were supposed to be at the bottom of the water, and were alleged to have been seen there in the vicinity of the castle. On the occasion of that search the height of the water in the loch was nearer its maximum than its minimum, and the conditions were otherwise unfavourable. No trace of the gates was found, nor was anything else of antiquarian interest brought to light. Not satisfied with the result of this search, and taking advantage of an abnormally low state of the loch, Lord Ailsa recently decided to renew the search. The work of under-water exploration was actively prosecuted for five days, during which the bed was systematically examined and probed over an area extending to a radius of a hundred yards from the castle island, and to a depth of 26 feet, but again without result so far as the finding of the gates or any probable fragment of them was concerned. The results of the search were, however, scarcely so barren as on the previous occasion, for the diver came upon a canoe partly embedded in the mud, but with its gunwale from stem to stern projecting therefrom. It was similar to those taken from the loch in 1823 and in 1831, in respect of being hollowed out of a single log. This would, of course, have been brought to the surface, but it was so much decayed that it came to pieces on being handled. It is of interest to note that the diver traced a regular series of what looked like stepping stones extending from near the west side of the lake shore to the castle, and at the greatest depth about 18 feet below the then surface of the water. What may have been the purpose of these stones it is impossible to conjecture, as they could not have been stepping stones in the ordinary sense of the word. Until the tunnel was driven through the rock at the outlet of Loch Doon into Ness Glen, prior to which it flowed over the top of the rock, these stones must have been about 30 feet below the ordinary level of the water. As the result of this second search it is concluded that the gates of Loch Doon Castle are not at the bottom of the loch, that they never were there, and that they were burned along with the castle.

ARMY CONTRACTS IN AMERICA.

On page 67 of our issue of July 31 we briefly contrasted the businesslike way in which the housing of the great American armies has been and is being conducted by the American authorities with the wasteful, haphazard, and costly procedure adopted here, and gave some brief particulars thereof. The main difference has been that here our authorities went to everybody but the right people for help, and actually denied afterwards that it had been offered, while in the United States every step seems to have been taken with the determination to secure effective co-operation. Some interesting facts about the problem which the Construction Division of the American Army had to solve were given at a recent meeting of the Council of the American Society of Mechanical Engineers at Philadelphia, by Mr. Charles T. Main, the President.

Early last spring the Presidents of the American Society of Civil Engineers, American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Institute of Architects, President of the United States Chamber of Commerce, the President of the Building Contractors' Employees' Association of Chicago and President of the New York Association of Contractors and a representative of the American Federation of Labour, were invited to go to Washington to pass on the form of contract which should be used in carrying out the vast programme of the Construction Division.

Before war was declared the construction work for the Army was done by the Construction and Repair Branch of the Quartermaster-General's Office. When war was declared the Cantonment Division was formed with one colonel, two captains of the regular Army, and one major of the Reserve Corps. Very soon there was put up to this division the problem of providing housing for about a million troops, and it was required that this housing should be ready in about three months. It became necessary rapidly to build up an organisation for planning this work. The Committee on Emergency Construction, with the assistance of contractors, engineers and architects, formulated the Emergency Construction Contract. This contract was used for all of the construction work for camps and cantonments and for other construction work which the Cantonment Division has done.

The work had to be let to the various contracting firms of the country. In spite of the small beginning of that organisation, they built up their own organisation. The contracts were let and the housing was ready for the men practically as soon as the men were ready for the camps.

There were first planned thirty-two cantonments, with the idea that the company formation contained one hundred and fifty men. Before work on the plans had proceeded very far, however, the orders were to change the company formation to two hundred and fifty men. After the plans were well along the number of cantonments was reduced from thirty-two to sixteen. It was estimated that each cantonment would cost about 6,000,000 dollars. After the work was nearly all done many changes were ordered, which increased the cost to about 9,000,000 dollars.

It was thought that the contracts for that work, with its varying changes of character and scope, could not be let under any other system except the emergency contract, which was cost plus a per cent., with a fixed outside sum. Before the cantonments were completed the Division was given charge of all the other construction work, and the total amounted to about 1,300,000,000 dollars. There are, perhaps, three hundred jobs, varying in size from a few thousand dollars to 45,000,000 dollars.

One job was started for the Ordnance Department with an estimate of a few hundred thousand dollars. Before it had proceeded far several hundred thousand square feet of floor space was added for the carriage department, and before it had proceeded much farther orders were given to add a cantonment for five thousand troops. All of these changes required radical changes in the plans. In another case, after the work was well along and several thousand men working, orders were received to stop, and the work was all stopped for several weeks, and then started again with many serious changes ordered. These examples illustrate how little is known of the eventual scope of the work at the start. There has been some criticism of this form of contract against the advisability of using the Emergency Construction Contract, and many people thought that possibly there might be some other way of doing this work. For that reason the Committee previously mentioned was called to Washington and asked to pass on a form of contract under which this emergency work might be done.

There are, generally speaking, two methods of doing the work. The first one may be called the purchase and hire method, under which the Government purchases all the materials and hires all the labour. To do this it would be necessary for the Government to build up an immense organisation in Washington, which would become very unwieldy, and the work would eventually have to be decentralised in order to be carried out. The time required for building up this organisation would be so long that the Committee decided that that method of doing the work should not be used at this particular time. The second method of doing the work would be under one of the various forms of contract, such as the lump sum contract, which has been used more than any other type in America, especially within the last few years. With this form of contract it would be impossible to start on any of the work until the plans and specifications are all prepared and bids are in and the contract awarded, and there would be a loss of time which might be vital to the project. Another form of contract is the lump sum with percentage allowances, or some other allowances, for additions, but the same objection holds to that form as to the lump sum contract. Another form is letting the work on a unit basis, such as a yard of concrete or a ton of steel, but there it would be impossible to form any intelligent idea as to what the unit price would be, because it could not be foreseen what the character of the work

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would be, where it was to be done, how many additions or how many changes were to be made, and therefore the Committee decided that that was not the proper form to use.

Finally the Committee came to the form of contract which has been called the Emergency Construction Contract, under which the contractor receives a percentage of the cost, the percentage diminishing as the cost of work increases, with a fixed sum at various intervals. Under this form of contract work can be started immediately, and it will allow the Government or any Department to make any changes which are desired in the scope of the work. The percentages are so small that it seems to be a fair thing for the Government. There can be no excess profit under this form, as the price of labour and materials is fixed by the Government. The Committee reported that in its opinion the Emergency Construction Contract was the proper form to use, and the report was transmitted to the Acting Secretary of War.

There is one other problem which came later which was rather interesting. The National Industrial Conference Board, composed of a great number of national industrial associations of the country, was very much exercised because the House of Representatives had just passed the Naval Appropriation Bill with a rider attached to it which prohibited the payment of cash bonuses, or the use of time studies, or any of the efficiency methods on any work done under that appropriation. Such action would not only have prevented any work of that sort being done in the arsenals, but it would also have prevented any private concern that was doing work for the Government from receiving any of that appropriation it had in operation unless it abolished efficiency systems. These, properly applied, do assist in speeding up production. If there is one thing that we ought to do in this country now it is to speed up production, and anything that is done to cause it to be diminished should be frowned upon. The National Industrial Conference Board thought that the Engineers, whose reports are looked up to as being unprejudiced, would be the proper people to send a resolution to the Senate protesting against the passage of a Bill of that sort. Representatives of the National Societies were invited to attend the meeting of the Board, and the latter, in turn, invited the Chairman of the Board to meet with the Engineering Council. The Engineering Council appointed a Committee to draw up resolutions, which have been sent to the Senate, Committees on Naval and Military Affairs, and others. Here we plunged headlong into wasteful expenditure under bad supervision of unfit labour, and, when landed in a welter of anarchy, set to work to create Committees of Inquiry, whose reports and records of official ineptitude and unfitness, which are at once the wonder of all business people and the astonishment of the world.

Master plumbers in Cheadle, Cheadle Hulme, Poynton, Bramhall, Woodford, Disley, and adjoining district have decided to increase their men's pay to 1s. 6d. per hour, which is to include all bonuses.

"Empties," according to the *City Press*, are a disturbing factor just now in the City. In pre-war days they represented a total of between 1,200 and 1,300 out of an aggregate number of 14,000 assessments. For the last two years the figure has been unpleasantly upward in tendency. The last return shows the total to be 1,879, a record figure that compares with 1,125 in the last half-year preceding the outbreak, and with 1,266 in the following half-year.

BUILDING SOCIETIES AND HOUSING.

SOME PRACTICAL SUGGESTIONS.

A paper on "The Housing Question" was read by Mr. David Lewis, Chairman of the Cheltenham and Gloucestershire Building Society at the recent annual meeting of the Building Societies' Association. According to the Registrar's last report (1916) there were 1,467 building societies; the receipts for that year amounted to £21,270,695, total assets at the same date were £66,118,795 and the amount due on mortgages £57,942,378.

Having dealt with the causes which had led to the shortage of houses, Mr. Lewis said the question arises as to why this shortage is not met by the natural law of supply and demand. With all its faults, the old system of private enterprise had much to recommend it; under reasonable control it built thousands of suitable houses to let at fair rents which provided investors and mortgagees with a moderate return on the capital invested, and the type of dwelling erected showed steady improvement. The building and allied trades were prosperous, and there was no shortage of dwellings for the workers. But private enterprise has undoubtedly for some years past been checked, and some of the causes assigned are :—1. The Finance Act of 1910, which renders builders' profit subject to Increment Duty, and property owners liable for both Increment Duty and Land Taxes. 2. The limit of the compound allowance for local rating purposes. 3. The present unfair system of assessing real estate for Income Tax purposes, only 15 per cent. being allowed from gross rentals; consequently owners are taxed upon assumed profit, or income, which they never receive, more particularly in these days when the cost of repairs and management has so greatly increased. 4. The increasing attractiveness of other forms of investment, difficulty of borrowing money on mortgage, and the dearness of what money is available. 5. The increased stamp duties on conveyances, which hinder the free transfer of land and houses. 6. The increasing requirements of local sanitary authorities in regard to house property; the difficulty of dealing with dirty and destructive tenants; and finally, the grossly unfair way owners of property and mortgagees have been dealt with by recent legislation. Prior to the war Property Tax was 9d. to 1s. in the £, and it now ranges to 6s. in the £. The cost of repairs is at least twice as much as in the early part of 1914. Yet the thrifty man, who in order to provide for his old age, had unfortunately invested his savings in house property, is prohibited by law from making even a small increase in rent to cover his increased outgoings. His tenants are probably earning twice as much as before the war, they may be letting one or two rooms at a price sufficient to pay the rent of the whole house, filling a small house with lodgers—and thereby increasing necessary repairs; but with all this the landlord must not get for his share the smallest increase. He is a profiteer, almost regarded as an enemy of the State, and the natural enemy of the working man. Under such conditions many owners naturally said, "Why should we be bothered with property that is a constant trouble and is rapidly becoming unremunerative? Government is eager for money to carry on the war, and is offering a safe investment, at rates varying from 6 per cent. downwards. I will sell out to someone requiring a house for his own occupation." What more simple! But the house owner must be penalised still further, and he cannot now sell any house let at a rental of not exceeding £35 in London and £26 in the country, unless it be to someone willing to allow a sitting tenant to remain at a pre-war rent.

Who is likely to invest money when the security previously enjoyed is deliberately destroyed, and a property owner is treated so unjustly and denied the rights of investors in any other security? What inducement is there for investors to find money for mortgage securities either on dwellings or small holdings? Large sums were formerly lent on small properties by solicitors on behalf of clients, in many cases at 4 or 4½ per cent. Although income tax has so greatly increased, a mortgagee of small properties cannot give notice to increase the rate of interest. Other classes of investors can withdraw their money from bonds and building societies and obtain 5¼ per cent. in Government Loans. An investor whose income is derived from mortgage interest can put forward as solid and legitimate arguments for an increase as any other section of the community, whether they be workmen, tenants, traders, or capitalists, but he alone is penalised. His money is locked up in what is often allowed to become a depreciating security. In many cases he is defied by his mortgagor who has a little legal knowledge, or is backed up by a shrewd, unscrupulous solicitor; he cannot obtain either his interest, principal, or possession of the property without protracted and expensive legal proceedings, and the remedy is almost worse than the disease.

Mr. Lewis went on to examine at length the Government proposals for meeting the housing shortage and put forward as suggestions :—

No scheme should be sanctioned until after a public and careful enquiry, made on the spot, has demonstrated that new dwellings are really required, cannot be provided by private enterprise, and will meet not only temporary but permanent requirements. That an economic rent shall be charged for dwellings provided by the Housing Authority. That varying classes of houses shall be provided.

The Local Government Board scheme suggests only the one class of house. Such a house, with one-eighth or even one-twelfth of an acre of land attached, after providing for roads and sewers, etc., could scarcely be erected for less than £400. At 5½ per cent., interest alone would require £22 per annum from each house, and provision must also be made for repairs, insurance, and rates, which would bring up the actual outgoings to at least £30 per annum, or, say, 11s. 6d. per week, besides which there must be provision for a sinking fund. Swansea is to at once proceed with a scheme for erecting 2,500 houses to be let at 10s. 6d. per week each. No doubt this will meet the requirements of a district where wages are high. But what of poorer neighbourhoods, say in agricultural rural district council areas, where such rents could not possibly be paid? Should not arrangements be made for a smaller, cheaper dwelling? Let there be elasticity, and an attempt made to meet varying requirements. But apart from this, they could not possibly contemplate the possibility of the State, or the municipality conjoined, being the only house builders. That may bridge over a temporary difficulty, but steps must be taken to reinstate the old system. What is to be done? Various remedies have been proposed or suggested, but it seemed to him that first and foremost must be an effort to restore public confidence in house property as an investment by : (1) Allowing owners to increase rents by a reasonable amount to cover increased cost of repairs, rates, and taxes, higher cost of collection, and in many cases higher rate of interest on bank loans or mortgages. (2) Allow owners greater liberty in getting rid of tenants who will not pay rents and are in various ways objectionable but are sheltered by recent legislation. (3) Restore freedom of sale where it can be shown there is good reason for realising an investment. (4) Reduce the cost of transfer of property due to the higher Stamp Duty and increased cost of conveyance, which have become a serious hardship, whilst other charges have also multiplied. (5) Abolish Increment Value Duty on dwellings below a value of £600, and thus also avoid legal charges for submitting deeds for Increment Value Duty Stamp.

Sir Walter Armstrong, the late director of the National Gallery of Ireland, died on Thursday last at his residence in Carlisle Mansions, Westminster. He was born in 1850, was educated at Harrow and Exeter College, Oxford, and for some ten years after 1880 was art critic to the *Pall Mall Gazette*, the *Manchester Guardian*, and the old *Manchester Examiner* In 1892 he succeeded the late Henry Doyle as Director of the Dublin Gallery, and in this post Armstrong remained for over twenty years, his services being recognised by a knighthood in 1899.

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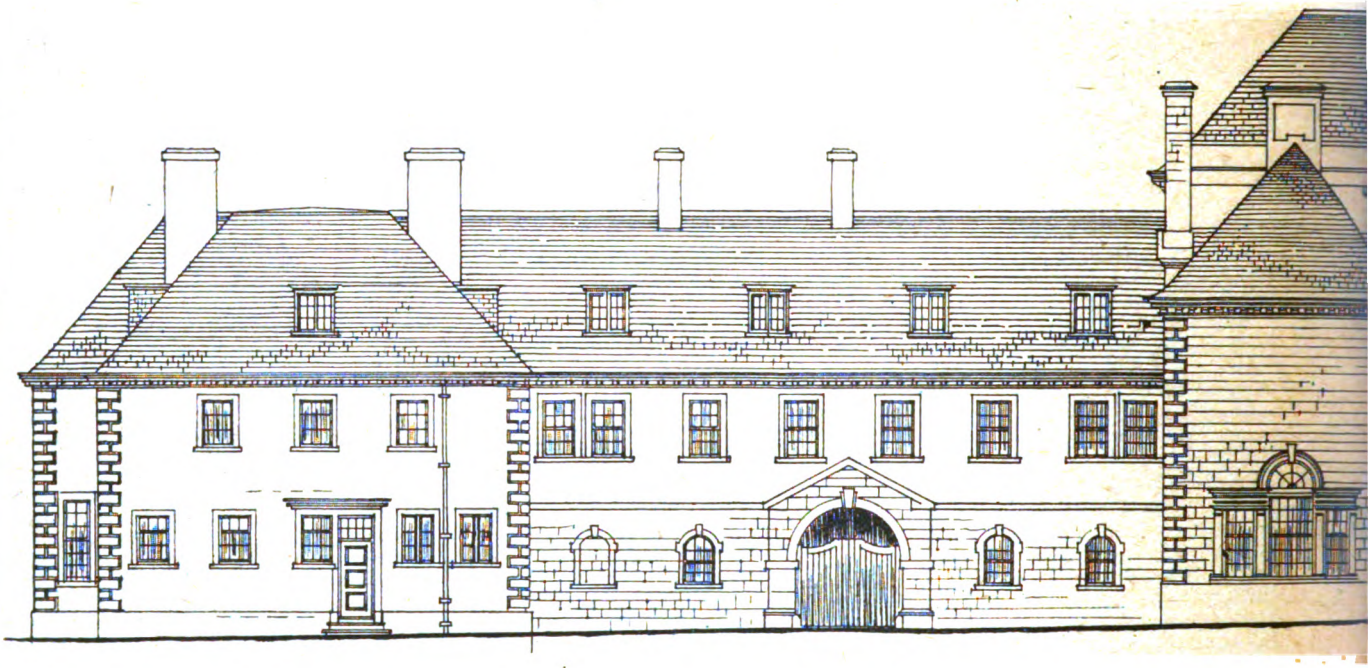
CRATHORNE · YORKSHIRE.

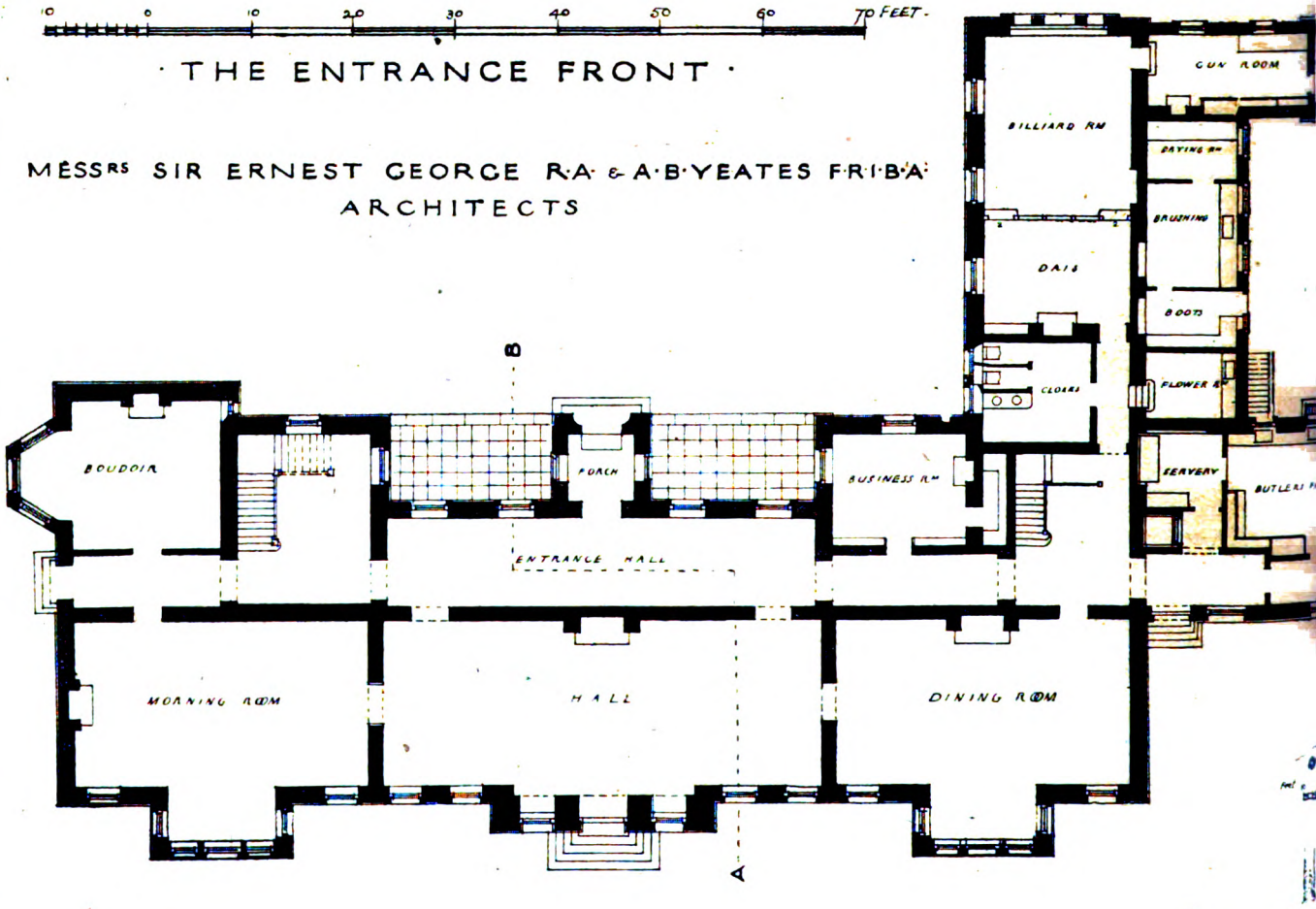
THE RESIDENCE OF J. LIONEL DUGDALE ESQ.



10 0 10 20 30 40 50 60 70 FEET.

· THE ENTRANCE FRONT ·

MESSRS SIR ERNEST GEORGE R.A. & A.B. YEATES F.R.I.B.A.
ARCHITECTS



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COURT LODGE, GROOMBRIDGE, KENT (PARTLY REBUILT FROM UDIMORE).

Photographed by Mr. D. J. JOHNSON (Messrs. JOHNSON, BIRD & Co.), Tunbridge Wells.

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COURT LODGE, GROOMBRIDGE, KENT (PARTLY REBUILT FROM UDIMORE).
Photographed by Mr. D. J. JOHNSON (Messrs. JOHNSON, BIRD & Co.), Tunbridge Wells.

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COURT LODGE, UDIMORE (PULLED DOWN AND RE-ERECTED AT GROOMBRIDGE).

From an Etching by Mr. H. SHEPPARD DALE, A.R.P.E.

(Exhibited in Pall Mall, Royal Society of Painter-Etchers, 1918.)

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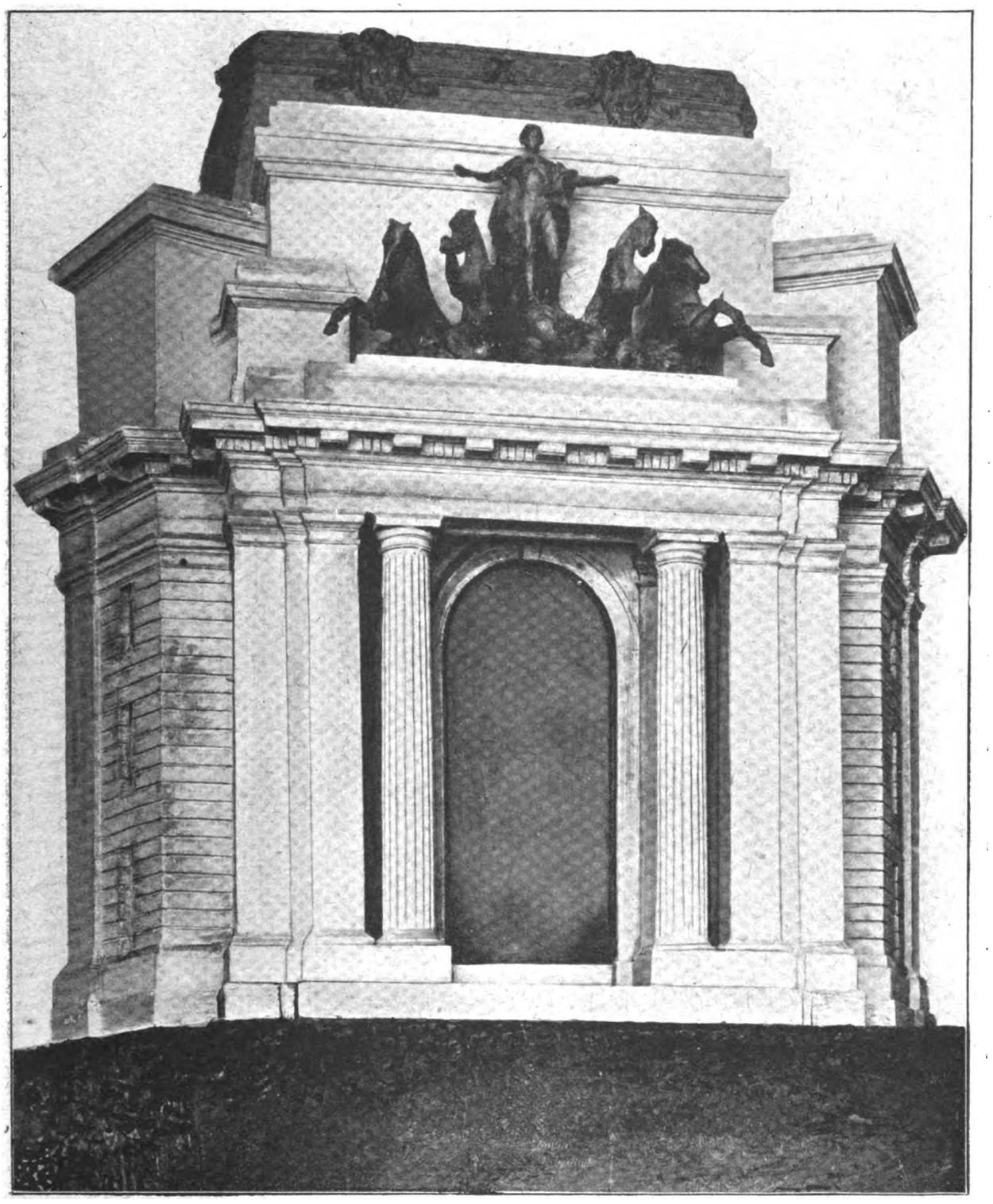

Bedford Lemere, Photo.]

PHOTOGRAPH OF THE MODEL IN THE ROYAL ACADEMY OF THE UPPER PART OF AUSTRALIA HOUSE, STRAND, W.C.

Mr. Bertram Mackennel, A.R.A., Sculptor.

Messrs. A. Marshall Mackenzie, LL.D., & A. G. R. Mackenzie, FF.R.I.B.A., Architects.

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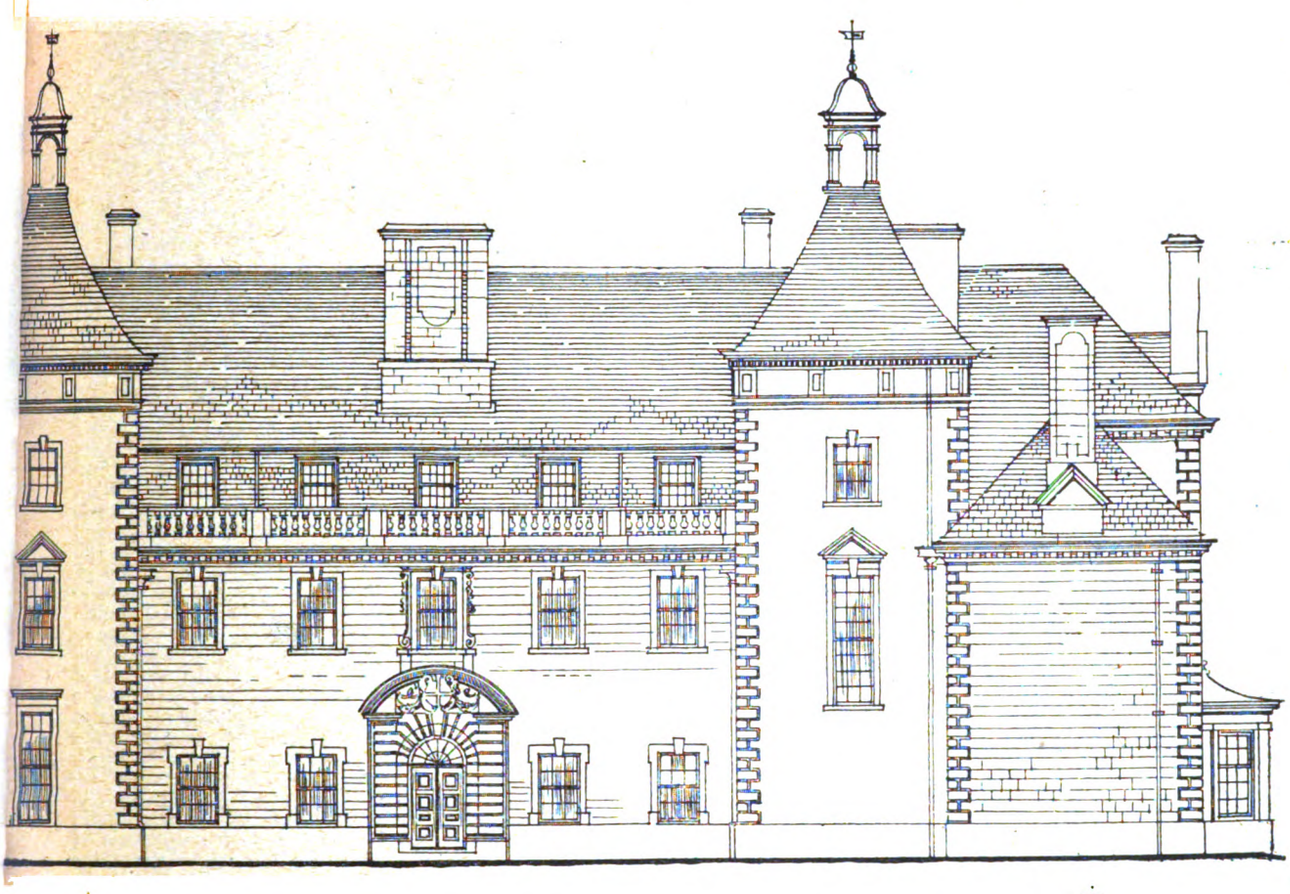
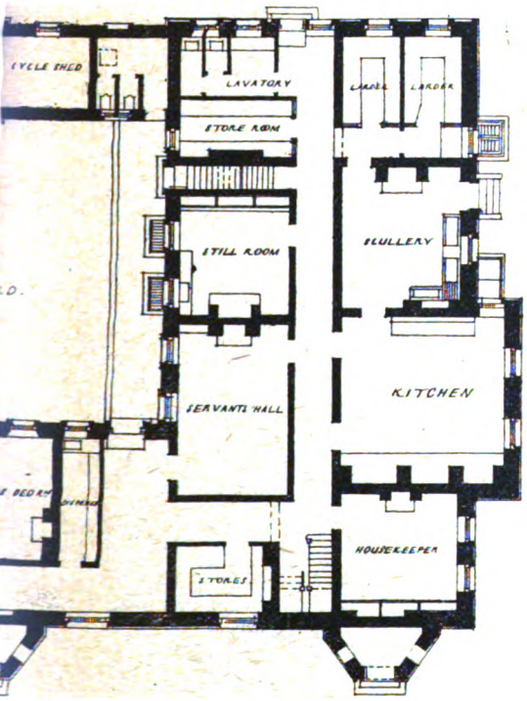
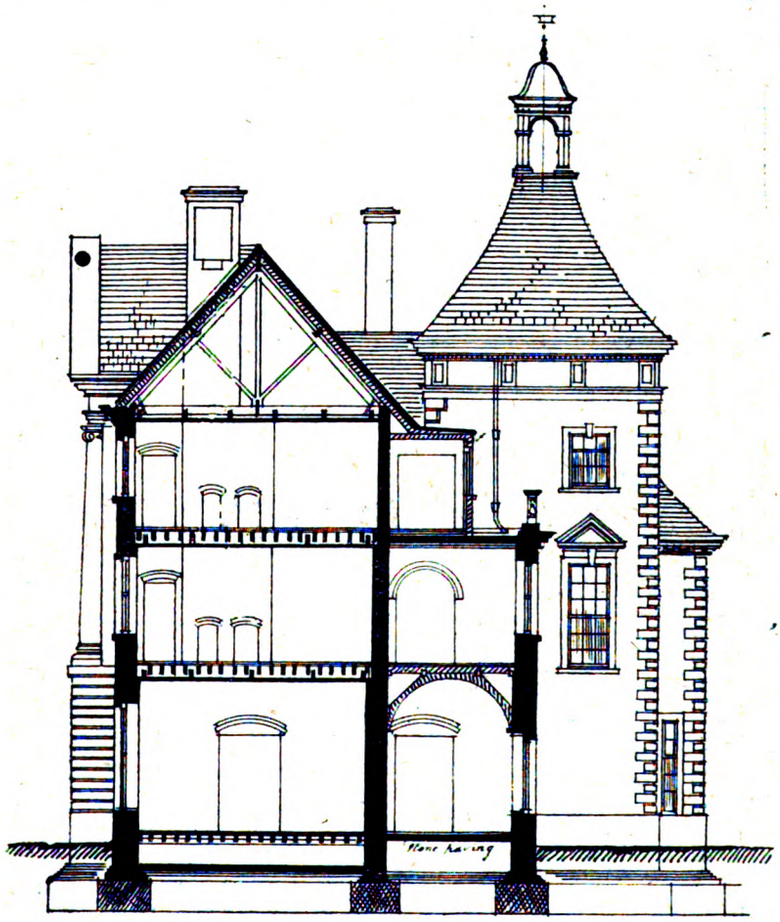




GROUND FLOOR PLAN.



SECTION A·B·

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Our Illustrations.

COURT LODGE, UDIMORE, AND COURT LODGE, GROOMBRIDGE, KENT.

The historic Court Lodge at Udimore no longer exists. All that remained of it was more or less carefully removed, and the parts have been reinstated in the erection of the new "Court Lodge" at Groombridge. The illustrations show both the old and the new. The etching picturing the old Udimore frontispiece was lately exhibited in this year's gallery in Pall Mall by the Royal Society of Painter-Etchers. The print was lent us by the artist, Mr. H. Sheppard Dale, A.R.P.E. This picture represents all that was left of this once famous place known as "Court Lodge." The remnant only consisted of a mere fragment of a much larger timber-framed building. The story of the property goes back to 1287, at a period when the ancient town of Winchelsea was being rebuilt. Records tell that King Edward the First made Udimore his headquarters when it belonged to the Etchingham family. Edward the Third was also associated with the property. Subsequently Edward the Fourth in 1478 granted a licence to John Elrington, then the occupier and owner of the estate, enabling him to fortify the house and form a park in connection with the Court House. No particulars are available as to the name of the precise builder of this timbered manor, "Court Lodge," but the holding, as the years went by, changed hands several times. At last the premises served as labourers' cottages, and then were used as a store-place for rubbish. The façade was put together and re-erected in the building of "Court Lodge" at Groombridge, near Tunbridge Wells, by Mr. Lawson Wood, when he made this place his country home. That was before the outbreak of the war. When Mr. Lawson Wood took up active service he relinquished this rural retreat, which was soon purchased by Mrs. Dix-Lewis, the present occupier. The pair of photographs reproduced form part of a series taken for Mr. Lawson Wood by Mr. D. J. Johnson, head of the firm of Messrs. Johnson, Bird and Co., the photographers of Tunbridge Wells. More recently a further extension to the property has, we understand, been made by the owner.

PHOTOGRAPH OF THE MODEL IN THE ROYAL ACADEMY OF THE UPPER PART OF AUSTRALIA HOUSE, STRAND, W.C.

This building was opened by the King on Saturday, August 3. We illustrated the premises in the Building News for July 4, 1913, when an exterior perspective and a plan appeared, and on October 20, 1915, an interior view of the Exhibition Hall and section of same occupied a double page. To-day we reproduce a photograph of the half-inch scale model of the upper part of the end elevation at the Royal Academy Exhibition this summer. Messrs. A. Marshall Mackenzie, LL.D., and A. G. R. Mackenzie, FF.R.I.B.A., of Chelsea, are the architects. The sculptured group shown in this model will be carried out in bronze by Mr. Bertram Mackennel, A.R.A., the sculptor, after the war.

CRATHORNE HALL, YARM-ON-TEES, YORKSHIRE.

We give a sheet of elevation, section, and ground plan of Crathorne Hall, designed by Messrs. Sir Ernest George, R.A., and Yeates. It was built 15 years ago for Lionel Dugdale, Esq., and occupies a fine position on a bluff above the river. It is built of local stone from the Cleveland Hills and has a fine axed face. The house is entered from a forecourt formed by the main wings, while the offices are grouped round a smaller court. The stables, garage, and bothies are carried out in a very complete manner, and have lent themselves well to purposes of a convalescent hospital, to which the house is at present converted by its owners. Messrs. Trollope and Sons were responsible for this excellent work. We hope to publish some details of the interior at an early date, reproduced from the working drawings.

HOUSING THE PEOPLE.

Mr. Hayes Fisher on the 6th inst. discussed the housing problem with a deputation consisting of members of both Houses of Parliament. The deputation was introduced by Mr. Herbert Samuel. The views of its members were set out in a memorandum urging that the Government proposals failed to meet the needs of the situation. No adequate means were provided for promptly ascertaining and checking housing requirements in all districts; no time-limit was fixed for the submission of schemes; no provision was made to insure the erection of houses if local authorities failed to build; and there was no definite promise of the necessary capital. The form of financial aid suggested by the Treasury had several disadvantages.

Mr. Hayes Fisher said that the subject was one to which he had devoted particular attention. With the Minister of Reconstruction he came to the conclusion that at least 300,000 houses would be needed within a year after the end of the war. That was a year ago, and probably now the figure would be 500,000. But they must be limited by what would be practicable in view of the difficulties in finding materials (especially timber), labour and money. The private builder had hitherto provided 95 per cent. of houses. Builders of all classes told him that prices would be so high and labour so difficult to get that no estimate could be made of profit after the war; he had met no builder who did not decline to enter the field at all or give any help unless promised substantial assistance in the way of a free grant. He agreed that they should do all they could to encourage the private builder, and there was a scheme already before the Treasury, but it would help only those who would buy their own houses; it was difficult in the circumstances to make use of the private builder. He did not think that any House of Commons would vote a free grant to a private builder, who naturally would not build without expectation of profit. No doubt they might give a private builder priority in getting materials and help him to obtain money cheaply, but the subject presented many difficulties. In regard to public utility societies he had seen no scheme whereby a society would forgo commercial interest on its money. If the State undertook the building it would have largely to use local authorities, and they came to the conclusion that it would be wise to enter into partnership with those authorities. Nine hundred authorities had indicated willingness to build before they knew that the Government would make itself responsible for 75 per cent. of the deficit on the rate for seven years. That plan, he thought, would be popular, provided that local authorities were certain that something very much better would not be offered. He believed that local authorities generally would play a businesslike and patriotic part, but until they knew that in broad outline the scheme was put forward was final some might hang back. The appointment of Housing Commissioners had been suggested, but the House of Commons would be suspicious of a new department with high-salaried officials. The Local Government Board had means of obtaining information through inspectors.

As regarded the possible apathy of some local authorities, he was loth to propose any form of coercion, but a short Bill would be introduced providing that where the Local Government Board is satisfied that housing is necessary, and the local authority has not taken steps to exercise its powers under Part III. of the Housing Act, 1890, the Board may by order authorise the county council to take action. The Government adhered to the proposal they had made, but would welcome any practical suggestion. Their policy had been before the Cabinet Committee by desire of the Chancellor of the Exchequer in order that he might be empowered to state publicly:—

(1) That the policy of the Coalition Government with respect to housing is embodied in the circular of the Local Government Board of March 18, and that local authorities cannot expect any material modification in the terms therein offered; that while there could be no change in the general limitation of the share of the local authority in the deficit in the produce of the penny rate, the President of the Local Government Board is authorised to say that the discretion resting with him under the circular will be generously exercised.

(2) That the President of the Local Government Board is authorsied to introduce and pass into law the Housing Bill as agreed to by the Committee over which Mr. Long presided.

ST. PAUL'S CHURCH, STAMFORD.

The suggestion mooted for restoring, upon the conclusion of the war, the old St. Paul's church portion of the Stamford Grammar School buildings and making it into a school chapel as a memorial—not only of the assistant-masters and old boys of the school who have given their lives for their country during the war, but of all those who have volunteered for service or otherwise distinguished themselves and brought honour on the school—is being taken up with enthusiasm.

The exterior of the old church has a very characteristic Norman stringcourse and corbel table; the pointed arches of the interior indicate a near approach to the next style, so that we can reckon St. Paul's church to have been erected about 1150. The present windows are of the reign of Edward III. (say, 1350). The pointed arches of the interior indicate the addition of an aisle to what was originally a single Norman church. In the Public Records Office in Chancery Lane, London, are preserved records and deeds of Merton Priory, in the County of Surrey, and which deeds date from 1114 to 1539. There is amongst them one deed dated February 17, 1200, made between the Prior and Monks of Merton and the Monks of St. Fromund, in Normandy, referring to the exchange of the Church of Kaanes (Caen), in Normandy, for tithes and Churches in England, viz., the tithes of the Castle of Stamford, and two silver marks from the Church of All Saints in Stamford, and the Churches of St. John, *St. Paul*, St. Michael, and St. George in Stamford, such exchange being made by the indulgence of Pope Lucius III., thus proving the existence of St. Paul's church at that date, viz., the year 1200.

In the interior of the building there is still remaining a mural inscription, which was formerly on the north wall, but removed when the school was enlarged in 1835, and fixed on the moulding over the doorway. "Hic jacet Eustachius Malherbe quondam burgensis Stamfordiæ." This man owned Hudd's Mill, and was a representative of the town in the Parliament held in York in the 15th of Edward III. (1332), and assuming that he died soon after, and was buried in the church, his remains have been lying undisturbed for nearly 600 years.

The spiral stone staircase in the south wall near the west end has been identified as leading to a room which was formerly over the west door, and was at the end of the 15th and beginning of the 16th centuries used as the chapel of St. Katherine's Guild. The original register of this guild has been preserved, and is now in the library of Gonville and Caius College, Cambridge.

When William Radcliff in 1532 first founded and endowed a Chantry and Free School, it was held in the Corpus Christi Chapel of St. Mary's Church; but when the Charter of the 3rd of Edward VI. (1549) was granted, authorising the union of parishes, St. Paul's and St. Michael's Cornstall in St. Leonard's Street were joined with St. George's parish, and whilst St. Michael's Cornstall Church was pulled down, that of St. Paul's was retained, being deemed suitable for the purpose of Radcliff's Free School.

The old church, having a history of more than 700 years, during half of which period it has been continuously used as a school for the youth of the borough, merits, and should obtain from those now entrusted with its care, every regard, in order to preserve to future generations one of the few remaining ancient buildings in Stamford.

Mr. C. L. Underdown, inspector and surveyor to the Fleggs Rural District Council, has been appointed district surveyor to the Blofield Rural District Council.

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DETERMINING WATER CONTENT OF SOIL.

In almost any engineering project the character of the soil has to be ascertained. The stability of the soil is due in varying amount to the percentage of water present as well as to the nature of the material composing the formation. In testing for a suitable foundation, especially in the case of heavy bridge piers and building footings, the usual method has been to take soundings, or sink test pits and borings until hard pan or solid rock has been reached. No attempt has been made to determine the water content in surrounding soil. In all irrigation and waterworks projects as well as sewer systems, it is important to determine the water holding capacity of the soil in order to compute the run-off in the area under consideration. The results of some experiments in this connection carried out by Professor C. E. Thorn of the Washington Agricultural College were recently read at a meeting of Idaho engineers.

The experiments, which refer only to one particular soil strata, might be extensively developed in other formations, and were carried out as follows :—

Three sets of furrows were made on a field of average slope and soil, underlaid by hardpan about 2 ft. below the surface. The field had not been irrigated for several weeks and the top soil was very dry. Each set consisted of three furrows, 300 ft. long. At the head and foot and at each 100 ft. interval they were drawn together and a 4 in. weir installed. On set A the furrows were 3½ in. deep and 20 ins. apart. A flow of 1.4 miner's inches at the head was divided among three furrows. Water ran through the first 100 ft. in twenty minutes, 200 ft. in one hour and 300 ft. in three hours and ten minutes. The furrows were wet across and practically the same quantity wasted out the lower end as was going in at the head in five and a-half hours.

On set B the furrows were 30 in. apart and 3½ ins. deep. Two miner's inches were divided among the three furrows. The progress of the water was 100 ft. in ten minutes, 200 ft. in thirty minutes, and 300 ft. in fifty minutes. Ground was wet across between furrows in seven and a-half hours and the soil taking practically no more water in eight and a-half hours.

Set C were 6 ins. deep and 30 ins. apart. Two inches were run in the three furrows. The water ran all the way through in an hour. Ground was wet across in six and a-half hours, and full to saturation in seven and a-half hours.

COMPETITIONS.

WELSH AGRICULTURAL LABOURERS' COTTAGES COMPETITION.—On Wednesday last Mr. D. Lleufer Thomas gave the decision of the adjudicators, Professor Abercrombie, Mr. J. A. Humphries, Mr. J. Cook Rees, Lady Beston, and himself, in the competitions in designs of cottages and living-in quarters for agricultural labourers in Wales. Altogether, he said, 183 designs were sent in, all, on the whole, of very satisfactory character, especially in the class for cottages containing a living-room, scullery, and three bedrooms. The prize of £60 was awarded to J. Austin Lloyd, of Powfoot, Annan. Class B, living-room, parlour, scullery, and three bedrooms, prize of £60, awarded to H. H. Heathman, Bristol. Class C, accommodation at the discretion of competitors, with a minimum of three bedrooms, planned entirely on one floor, prize £50, won by Miss E. D. Blacker, Bristol. The premium offered of £10 for the best design of accommodation of unmarried men on farms, termed living-in quarters, was awarded to Messrs. Thomas and Morgan, Pontypridd. A special prize was given to "Gwyneth," whose name was not ascertained.

Mr. William Weatherhead, J.P., of Keighley, Yorks, vice-president and member of the council of the Auctioneers' and Estate Agents' Institute, who passed away early on Saturday morning, August 3, at the age of seventy-three years, was one of the leading auctioneers and valuers in the Keighley district and well-known throughout the West Riding and London.

DAMASCENE STEEL.

By COLONEL NICHOLAS T. BELAIEW, C.B.

One of the many articles which contributed to the world-importance of Indian trade was the famous Indian steel. It appeared in Western Europe during the Middle Ages, under the name of damascene, or Damascus steel. By another trade route through Persia and the Caucasus it found its way to Russia, under the Arabian name of "foulad," which the Persians spelt as "poulad," and the Russians as "bulat."

We find, for instance, in the journal of Prince Zvenigorodsky, the Russian Ambassador in Persia, the following words of the Shah Abbas: "Helmets and shishaks are manufactured in our country, but a good 'bulat' is brought here from the Indian kingdom."

On the other hand, from the twelfth century comes the testimony of the Arab geographer, Edrisi: "The Hindoos excel in the manufacture of iron and in the preparation of those ingredients along with which it is fused to obtain that kind of malleable iron usually styled Indian steel. They also have workshops wherein are forged the most famous sabres in the world."

The iron and steel industry was highly developed in ancient India. A witness to this exists not only in the famous wrought-iron pillar of Delhi, but in many other specimens, some of them at least being undoubtedly high carbon crucible steels.

To this last category belonged the wootz, or small cakes of carbon steel, from which the damascene blades were manufactured. Some of such cakes were investigated by Réaumur, but he found nobody in Paris who could forge them. Some others were presented to the Royal Society by Dr. Scott, of Bombay, and brought to this country by Dr. Pearson. Faraday took a keen interest in them, and his investigation of alloy steel, conducted in conjunction with Stodart, was the result.

Subsequent researches of General Anossoff, Professor Tchernoff, and the author led to show that damascene steel was a very pure high carbon crucible steel, with excellent mechanical qualities and a splendid watering.

In his recent paper on this subject to the Iron and Steel Institute, the author explained that the splendid watering of the Oriental blades showed the amount of mechanical treatment the original cake was subjected to; this watering, from the point of view of modern metallography, was its macrostructure. In order not to spoil this watering the Oriental maker never dared to exceed the temperature of about 700 degrees.

One of the many results of this enforced carefulness was the spherodising of cementite into blobulites, and the subsequent ductility of the alloy, which struck both the ancient and modern explorer.

The author wishes to draw the attention of all interested in the production of high carbon and alloy steels to the many possibilities, especially from the point of view of after-war trade, which the damascene steel, or, we may better say, the "damascene process," offers to the steel-maker in this country and in the Indian Empire.—*Journal of the Royal Society of Arts.*

Mr. W. M. Gray, builder, has been added to the Commission of the Peace for the city of Oxford.

The Scotch church in Oldham Street, Liverpool, has totally collapsed; it was closed for worship in September, 1907. The church was being used to store the parts of the organ which is being built in Liverpool Cathedral, and they are, unfortunately, buried in the ruins. The building was erected in 1793 by some leading Scotsmen of the city, including Sir John Gladstone, the father of William Ewart Gladstone.

Lieut. Chas. Taylor Whiteley, a professional associate of the Surveyors' Institution, of 25, Woodland Way, Mill Hill, N.W., has died from wounds received at the front, aged 32 years. He was a member of two old Huddersfield families, and served his articles with Mr. Rhodes Calvert, of Bradford. After his enlistment in 1915, he saw twenty months' active service in France, and returned to England for a spell, being then recalled to France.

THIN CONCRETE ROOFS UPON IRON STRUCTURAL WORK.

In the German official specification for the calculation of reinforced concrete structures issued May 24, 1907, no allowance was made for shrinkage or for the effects of changes of temperature, and therefore a special paragraph 15 was added in the issue of January 13, 1916. The author considers that some such addition was necessary and cites an example of unsatisfactory construction which came under his notice before the appearance of the amended regulations.

It concerned the roof construction of a large machine shop, with a floor area of about 108 m. by 27 m., having a span roof with lanterns. The roof construction consisted of roof principals placed at 7.5 m. centres, with purlins above placed at 1.75 m. centres. Over the purlins was formed a reinforced concrete roof 6 cm. thick, of which the upper surface was 1.18 ins. above the top flange of the purlin and the same distance below it, and was connected with the lower flange by a curved projection; the roof had a slope of 42° to the horizontal. The eaves of the roof were at a height of 17 m. and the ridge at 26.5 m. above the floor level, and the axis of the building ran from south-east to north-west, so that one entire side of the roof was exposed to the prevailing south-west winds. The construction of the roof took place between February and August, 1915, but details of the weather during that period are not forthcoming. In spite of the fact that this thin concrete roof was only covered on the outside with Ruberoid about 2.5 mm. thick, no expansion cracks were visible on completion. Shortly afterwards, however, hundreds of cracks appeared perpendicular to the iron purlins, that is, at right angles to the main axis of the building and parallel to the roof principals, and the influence of the shrinkage and the changes of temperature was so pronounced that, in spite of the unequal elasticity of the Ruberoid covering partially stretched by the roof, the latter began to leak at several places.

The author then goes into calculations of the stresses upon the various members of the roof and the deflection of the purlins under the load. He criticises the design by which the whole weight of the concrete is thrown upon the purlins, causing a cross bending stress, and concludes that the additional paragraph in the official specification is needed to prevent such designs being adopted. (*Deutsche Bauzeitung*, June 15, 1918.)

Mr. Wilfred E. Kelly, Lieut. R.N.V.R., a member of the Society of Architects, has been mentioned in dispatches for distinguished service on the night of April 22 and 23 last during the attack on Zeebrugge-Ostend.

An agreement has been entered into between the Government and the Port of London Authority for proceeding with the immediate completion of the Albert Dock extension, the progress of which has been delayed owing to war conditions. The extension provides for a wet dock 64 acres in area, an entrance lock 800 ft. long and 100 ft. wide, and a dry dock 750 ft. long and 100 ft. wide.

The Wallasey Art Society have registered a strong protest against the decision of the town council to place the shot-pierced funnel of the "Iris" on a site to the south of Egremont Ferry Buildings as a memorial to the Zeebrugge exploit. In the opinion of the members of the society, the funnel would not harmonise with the surroundings, and would prove a serious disfigurement of the promenade.

The Brighton Corporation have agreed to purchase the Moulscombe Estate for £42,500. On the area south of the second viaduct east of Lewes Road there are about 75½ acres, which would accommodate 900 houses; also a small piece north of the railway, 6½ acres in extent, which would provide for seventy-five houses. For recreation purposes a portion of the estate adjoining Hollingbury Park is recommended.

Holfe O'Hagan, describing himself as an architect, who stated "he believed he was nearly related to the Hohenzollern family," aged 27, was sentenced at Bow Street last Wednesday to six months' imprisonment for failing to answer a question addressed to him by a police officer under an order from a competent military authority as to the nationality of his father. He had previously been sentenced to four months' imprisonment as an unregistered alien.

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Our Office Table.

In a paper read by Dr. F. Schaffernak before the meeting of the Society of Austrian Engineers and Architects on March 17, 1917, the author defines hydrology as the science of the construction of waterworks, and the greater part of the address comprises a description of the various types of instruments employed for measuring the flow of water in rivers and streams. These range from the pocket type up to the large automatic recording apparatus, and the methods of obtaining the average flow from observations taken at various points on the surface and below the surface are explained. Two plates illustrate the twin eddies formed on the down-stream side of a vertical cylindrical object held in the current, one series being photographs made while the flow of current was constant and the second while the velocity of the current was gradually increasing.

The cleaning of the discoloured natural stone fronts of buildings is usually effected with a sand-blast, and the apparatus consists of a suitable internal-combustion motor driving an air-compressor, an air reservoir, and suitable hose and sand arrangements, the whole plant being mounted upon a motor vehicle. In an article in the *Deutsche Bauzeitung*, June 12, 1918, several forms of the apparatus are illustrated and described, as well as painting apparatus, which can be used in a similar manner. The author describes the two systems, one acting by suction on the sand, and the other by pressure, and considers the latter the better. The hose should not exceed thirty metres in length, as it is rapidly worn out; if greater distances are to be reached, then the sand-container should be moved nearer the work. One of the illustrations shows a Gutmann apparatus. While an air pressure of about six atmospheres (90 lb. per sq. in.) is necessary for sand-blast cleaning, a pressure of 1 to 1½ atmospheres (15 to 22.5 lb. per sq. in.) is enough for painting. The nozzles for paint and sand are shown in section in the original.

At Spalding, on Thursday, August 8, Arthur William Lloyd, main roads surveyor to the Holland County Council, was charged with embezzling £178, the moneys of the council, and there was also a charge of falsification of accounts. The principal evidence was given by Thos. Allin, finance clerk to the council, and W. H. Shave, of the Capital and Counties Bank. It was alleged that the accused's cash account showed a balance at the bank of £182, when it was actually only £4, and that his bank pass book contained an entry of £178 not received by the bank, whilst the initials to the book, purporting to be those of the bank manager, were not his. The Bench held that the embezzlement charge failed, but committed accused for trial at the Lincolnshire Assizes on the charge of falsification of accounts.

One of the problems of to-day, remarks *The Engineer*, which after the war housing will accentuate, is the scarcity of timber. Up to the end of last century there can be no doubt that architects and builders erred on the safe side in their use of timber. The architect cannot deal with timber as with steel and say just what it will stand before rupture, and consequently the factor of safety is high. It is a question now if this factor of safety cannot be lowered. If instead of a factor of seven we have a factor of five, we are effecting a considerable saving of material and thus also reducing the cost.

Proposals for a tunnel between Great Britain and Ireland, to which Mr. G. Stewart, M.P., has directed the Prime Minister's attention, have been almost as many as for a tunnel to France. Five Irish tunnel schemes are on paper. One route proposed is between the Mull of Cantire and the North of Ireland, another between Portpatrick and Donaghadee, a third between Portpatrick and Whitehead, and the others between Stranraer and Larne, and Wierton Hill and Nogee Island. Some years ago, also, a Bill was brought before Parliament for the construction of a solid roadway across the Irish Channel. A bridge and a tube sunk beneath the surface have also been proposed.

Last week Sir Lionel Earle (Secretary of his Majesty's Office of Works), Mr. C. R. Pearce (Chief Inspector), and Mr. W. J. Hemp (Inspector of Ancient Monuments) paid a visit to Carnarvon Castle, on the restoration of which a considerable sum of money has been spent since 1911, the year of the Investiture of the Prince of Wales within its walls, and expressed surprise at the damage done to the grounds by the crowds of people who attended a recent baby show and religious meetings in the Castle. It was said that the Commissioners had had under consideration a proposal to spend more money on the Castle, but owing to the damage done it was no encouragement to them to incur any further expenditure. Certain privileges enjoyed by the Carnarvon people, who were admitted into the Castle free of charge, had been abused, and Sir Lionel said the Commissioners would seriously consider the advisability of withdrawing those privileges which had been enjoyed for many years.

LIST OF TENDERS OPEN.

FENCING.

August 15.—Supplying and erecting chestnut fencing, etc., for allotments at Pink Bank Lane, Croweroft; Green Street, Ladybarn; and Hawthorn Road, Chorlton-cum-Hardy, Manchester.—For the Small Holdings and Allotments Committee.—City Engineer's Office, Manchester.

PAINTING.

August 15.—External painting, repairs, etc., at Fulham Military Hospital, Fulham Palace Road, W.6.—For the Fulham Board of Guardians.—E. Y. Mott, Clerk, 129, Fulham Palace Road.

August 17.—Painting the iron and steel work at Hulme Street, Manchester, tunnel.—For the Paving, Sewering, and Highways Committee.—Specifications and forms of tender on application at the City Engineer's Office, Town Hall, Manchester.

August 17.—Painting various bridges in Manchester (tenders to be let in two contracts).—For the Paving, Sewering, and Highways Committee.—Tenders to the Chairman of the Paving, etc., Committee.

SCREENS.

August 16.—Tenders, addressed to the Secretary, H.M. Office of Works, Storey's Gate, London, S.W.1, are invited for the supply of single and double compartment voting screens.—For the Commissioners of H.M. Works.—Forms of tender on application to the Controller of Supplies, H.M. Office of Works, King Charles Street, Westminster, S.W.1.

Mr. Walter Aldridge has been elected Master of the Joiners' Company.

The East Ham Council has passed plans, submitted by Lewis Solomon and Son, for a chapel at the Jews' Cemetery, Lonsdale Avenue.

The death of Mr George Fletcher, architect and surveyor, aged 82, is announced at his residence, Rose Cottage, Bilton Lane, Harrogate.

The wages of the employees at the Penrhyn Quarries have been advanced by 10 per cent. Since March, 1917, their wages have been increased by over 30 per cent.

It was announced at the prize day of King's School, Canterbury, that Mr. and Mrs. J. F. Drughorn, of Lancaster Gate, London, proposed to endow the school with laboratories, at a cost of £25,000, as a memorial to their son.

Three bells at Christ Church, Wellington, New Zealand, which came from Germany, and are supposed to have been cast from French cannon taken at Sedan, are to be melted, and, at the Government's instruction, the ingots will be returned to France.

Mr. George Frederick Vine, aged 65, of Bournemouth, and of Messrs. Rutley, Son, and Vine, auctioneers and surveyors, George Street, Euston Road, N.W., who died at Poole, the result of a yachting accident, on May 21, has left £23,711.

The Home Secretary, in Parliamentary papers, states that the internment order in the case of De Laszlo, the painter, is still in force, but in view of the state of Laszlo's health he has authorised his temporary release on parole to a specified nursing home in London, on condition that he shall not go outside it or (except by special permission) communicate with any person other than his family, medical attendant, and the staff of the home. He is still in the home.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

BATH.—For construction of a new gateway at electricity works, for the corporation:—
Long and Son, Ltd. £69 0 0
(Accepted.)

DERBY.—For excavation work in connection with extension of generating station, for the corporation:—
Walkerdine, W., Ltd. £297 0 0
(Accepted.)

GLASGOW.—For painting at properties in Gallow Gate and Schipka Pass, for the corporation:—
Stirling, J. £195 15 0
(Accepted.)

LONDON.—For repairs of jetty at Grosvenor Road Wharf, for the Westminster City Council:—
Improved Wood Pavement Co., Ltd., disturbance and reinstatement of about 65 yards super. of jetty, 20s. per yard super. (recommended for acceptance).

LONDON, E.C.—For masons' and paviors' work for six months and reparation of sewers for six months, for the City Corporation:—
J. Mowlem and Co., Ltd., at an increase of 15 per cent. beyond the 42½ per cent. on the original schedule prices, and at 10 per cent. beyond the 46 per cent. on the original prices for measured work (accepted).

LONDON, S.E.—For alterations, etc., at the pavilion, for the Lewisham Board of Guardians:—
Peyton, A. T. £335 0 0
(Accepted.)

LONDON, S.W.—For tarring roofs, etc., of the annexes at Tooting Military Hospital, for the guardians of Wandsworth Union:—

Lovell, Y. J., and Son, 32, Spring Street, Paddington	£98 15 0
Glendinning, W. M., 343, Trinity Road, Wandsworth, S.W.18 ..	84 0 0
Jewell, R. A., 30, Fairfield Street, Wandsworth, S.W.18	79 0 0
Hudson Bros., 207, St. John's Hill, S.W.11	76 0 0
Foster, F. and G., and Co., 46, High Street, South Norwood, S.E.26*	67 0 0

(*Accepted.)

OXFORD.—For cleaning and repainting the Cowley Poor-law School, for the Oxford Board of Guardians:—
Lomas and Co., Cowley Road, Oxford £79 15 0
(Accepted.)

WALTHAMSTOW.—For supply of electric hoist to the electricity department, for the Walthamstow Urban District Council:—
Vaughan Crane Co., Ltd... .. £116 0 0
(Accepted.)

WANDSWORTH.—For equipment of national kitchen, at Clapham, for the Wandsworth Borough Council. Accepted tenders:—

Nutting, J., and Sons, joinery work	£232 17 6
Staines Kitchen Equipment Co., Ltd., kitchen equipment ..	198 12 6
Richmond Gas Stove and Meter Co., kitchen equipment ..	177 10 10
Baker, T. and W., hot and cold water supply pipes, etc. ..	97 11 0
Baker, T. and W., gas supply pipes and connections	57 0 0

WANSTEAD.—For painting and repairs at the isolation hospital, for the urban district council:—

Woollaston, A.	£366 14 0
Jolliffe, J.	365 8 6
Starke, F. C., Manor Park ..	354 0 0
Robins, A. W.	329 15 0

WOLSINGHAM.—For the erection of ten shelters at Holywood Hall Sanatorium, for the Durham County Council:—
Nelson, S., Durham £215 0 0
(Accepted.)

The death has occurred at Ascot of Mr. Alfred George Bessemer, last surviving son of the late Sir Henry Bessemer, the engineer and inventor, aged 78.

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August 21, 1918. Volume CXV.—No. 3320.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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ILLUSTRATIONS.

The Council Chamber, Christ's Hospital, Great Tower Street, E.C. Mr. Arthur Blomfield, M.A., F.R.I.B.A., Architect.

Choir of St. Matthew's Church, Bethnal Green, E. Messrs. Eden and Freeman, Architects.

Rue de Caumont, Caen, Normandy. An etching by Miss Adeline S. Illingworth, A.R.P.E. (from the Exhibition of the Royal Society of Painter Etchers, 1918).

A bedroom after the manner of Henri II. in a house in France. Designed by Lieut. Murray Adams-Acton, S.G. for Mrs. Oliver.

Currente Calamo.

We hazard the opinion, especially if a General Election is really coming, that the lucubrations of the Select Committee on the Luxury Tax are hardly likely to be embodied, as they stand, in any Bill this moribund Government and effete Parliament is likely to pass. To start with, the tax is at the rate of 16.2-3 per cent. in England, whereas in France, where it has been a failure, it is only 10 per cent. In all by which Art is affected it is a tax on brains, good workmanship, and good materials; while it offers a premium on ugliness, scamped work and shoddy. In trade, all the while we are talking Protection for home industries, it favours the foreign exporter on imported "luxuries." As a matter of fact the buyer is going to be saddled with the tax, the whole of which, with the usual addition for their trouble in collecting it, the manufacturer and the profiteering shopkeeper will extract from their customers. In this incidence it is absurdly unfair. If a man buys a single pair of boots at £2 5s. he will be taxed. If he buys two pairs at £1 15s. each he will go scot free. The Luxury Tax and the Fuel Regulations are matters that will be felt and understood by every voter, even by the biggest fool that is ever humbugged by a glib candidate or a party caucus; and a real live Party should be organised at once with no other plank in its platform than hostility "agin the Government" that cannot "win the war" without taking the last halfpenny in our pockets to do it, and leaving the really luxurious in clover.

By this time, possibly, now that the "Notice to Consumers" which is supplied with the application form by the authorities has been studied by the great majority, it will have been found that its twenty-three paragraphs, complicated as they are by many alternative sub-divisions, notes, and references to clauses and forms, are certainly unintelligible to tens of thousands whose houses it affects. Certainly, as a correspondent of the *Times* pointed out in a reasonably argued letter in its issue of the 15th instant, the preposterous inequality of sacrifice demanded will excite bitter resentment and revolt, for the very life of those unfairly treated is at question should the coming winter prove severe. That the man with a small family and a large house should have abundant fuel, while he with a large family and a small house must go without a sufficiency of his bare necessities, is so cruel an injustice that one cannot conceive how even the official mind can have contemplated it. A, for instance, who has six rooms, occupied by four persons, must submit to a reduction of between 50 and 60 per cent. on his normal consumption; B, with a house of 18 rooms and the same family, may not only buy more coal than he now uses, but (as occupier of a house of more than fifteen rooms) has a right of appeal for special assessment, which A is denied. Could any more unfair and stupid scheme have been devised—even by Sir Albert Stanley! We do not believe it. We believe the regulations were purposely framed to favour the large householder at the expense of the smaller ones. We are sure the regulations cannot be enforced against those they oppress; and if there is trouble we should not feel safe as an occupier of a house of more than fifteen rooms, with a special assessment and a full cellar!

The Scavengers' Strike at Manchester is disgraceful alike to the shirkers on the municipal councils of Manchester and Salford and to the men who left their work at the bidding of the union of municipal employees which is looked at askance by the older and well-recognised trade unions. An outbreak of some epidemic may supervene any day; and, instead of holiday-making, the health committees should have promptly organised volunteer parties to clean the streets. A worse instance of civic incompetence on the one hand, or truculent self-seeking on the other, has never been recorded. It additionally emphasises the more and more apparent necessity of stopping all strikes till compulsory arbitration has been accepted. Unfortunately, Mr. Winston Churchill set the pace for demands of the sort by his surrender to the workmen under Government control, and there is little doubt that the employees of municipal bodies will follow suit in defiance of the facts that the conditions under which they work are totally different, enjoying as they do permanent situations, reasonable holidays, short hours, and, generally, easy and well-paid work. In all respects the obligation of the municipal public servant, in that his duty is to save the life and health of his fellow citizens, should be as binding as that of the soldier at the front. That it is not so at Manchester the traitorous cupidity of the strikers proved but too completely!

The fouling of the public footpaths by dogs in the metropolis is year by year becoming a more disgusting nuisance and a greater danger to health, and the action of a West End borough, which has posted up notices asking people to train dogs to be clean and use the roadway and not the footpath, should be followed by similar steps by every metropolitan authority. It might at least prepare the way for the more stringent measures needed, for nothing is likely to teach decency to some dog-owners but a stiff fine. The calm indifference to remonstrances of some of these, including, apparently, modest women, can only have been equalled by their forebears among the wicked in old Jerusalem, who, as described by David in the 59th Psalm, rivalled the unclean habits of the animal, which doubtless caused its dislike by sanitary-minded Jews. Some of the northern suburbs are largely inhabited by these sinners against decency, especially districts infested by still uninterned Germans and other aliens. Not infrequent observations on Highgate Hill, for instance, suggest that the Borough of Islington might well try the effect of a notice posted thereon for the benefit of some of the adjacent ratepayers, whose dogs are kept outside their doors all day long, apparently to facilitate their frequent defilements. The police as yet are, of course, powerless, which accounts for the fact, to which we pledge our reputation for veracity, that at the corner of a not far distant northern residential road we saw one guardian of the peace so absorbed in Sunday meditation that a passing dog had mistaken one of his rigid legs for the lamp-post against which he was leaning!

Not a few of the big fires of late, some following each other, as at Newcastle, in alarmingly rapid sequence, cause us gravely to doubt whether many of us

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realise the danger of the too frequently permitted accumulation and exposure of dust of all sorts. As is well pointed out by the American Department of Agriculture, which has issued a three-cent booklet on the subject, if we want to start a fire in a stove quickly we do not try to light a large stick of wood with a match. We are not even content with splitting the large stick into smaller ones. To get a good blazing fire immediately we reduce one of our big sticks to shavings, and at the touch of a match off it goes. If these shavings were ground to a coarse powder, spread out in a thin layer, and ignited, this powder would burn very rapidly. If ground fine and scattered about so that it became mixed with the air of the room, we should not even need a match to ignite it. A very small electric or friction spark might cause this dust-laden air to take fire and burn so rapidly that it would produce an explosion. For the only difference between the halting combustion of a pile of damp leaves and the explosion which sends a giant projectile on its way is that the leaves burn slowly, giving the gaseous products of combustion time to dissipate themselves without crowding or violent expansion, while the powder burns with such extreme rapidity that gas is created faster than it can possibly find vent. And the rapidity of burning, other things being equal, is wholly a question of exposed surface. Substances which at the temperature of ordinary flame ignite with difficulty or not at all will burn keenly and even explode if we divide them into sufficiently small particles to afford a sufficiently large exposed surface.

The architect can do something to make this impossible in planning factories and storehouses, but those engaged in the handling and storage of all kinds of finely divided matter need to exercise more commonsense and caution than, we are persuaded, are manifest. Almost any kind of finely divided matter containing carbon burns, under favourable conditions, with a speed that converts combustion into explosion. Among such dusts are those of grain, flour, sugar, rice, feed, paper, cotton, leather, wood, cork and fertiliser. We cannot grind or cut or scrape or polish or beat or perform any other mechanical work calculated to change the form of our medium without a certain proportion passing off as dust. Finely divided matter like flour, loose bulk substances like grain, large pieces of materials as soft as wood and leather, cannot even be moved from place to place without more or less loss by attrition. And we cannot have manufacture or transportation or commercial usage of any sort without employing either mechanical processes which create friction or electricity. In other words, we can never handle these dust-producing materials except under conditions giving more or less probability of sparks. This probability is greater if we are careless; less in direct ratio with the degree of care we exercise. The materials causing dust are all of such nature that the fire following an explosion of that dust destroys them beyond hope of salvage. Likewise they are the things —food for man and beast, leather, textiles—of which we are in greatest need now, and of which extra production is hardly to be had. Dust, with its allies, spark and flame, is eternally plotting to destroy valuable property, valuable foodstuffs, even valuable lives. Only by eternal vigilance can it be defeated. With the season of manufacture and storage of food against the coming winter now at hand, it is the bounden duty of every one engaged in that work to find out what contribution he can make to the common cause. In one explosion last year enough grain was destroyed to supply 200,000 soldiers with bread rations for a year!

THE SCOTTISH LOCAL GOVERNMENT BOARD AND HOUSING.

The Scottish Local Government Board has issued a Memorandum by the Board's Housing Commissioner of points to be kept in view in connection with the laying-out of sites and the designing of houses for the working classes. The suggestions made therein are chiefly the result of the experience gained by the Board in carrying out housing schemes under war conditions on behalf of the Admiralty and the Minister of Munitions. Appended to the Memorandum are specimen plans of lay-out, design, and street construction adopted in certain of these schemes. It is hoped that this Memorandum and relative plans will be of assistance to local authorities proposing to formulate schemes of post-war housing. Additional copies of the Memorandum can be obtained from H.M. Stationery Office, 23, Forth Street, Edinburgh, price 1s., with suggestions in regard to the provision and planning of houses for the working classes.

In order to ensure the fullest measure of expert assistance being available to local authorities, the Board have arranged, in consultation with the Institute of Scottish Architects, to promote an open competition among architects. Designs are invited for lay-out plans and for plans of various types of houses, and an approved panel of architects will be selected by competent assessors, from which local authorities may appoint an architect to advise and assist them in the carrying out of their schemes. It is hoped that this memorandum and attached plans may also be of use to architects intending to enter this competition, and that these plans may be regarded by them as designs upon which it is desirable that improvements may be effected.

LAY-OUT OF SITE.

A site having been selected that is regarded as suitable after consideration of the various points above mentioned, it is desirable, unless the area is comparatively flat, that it should be carefully contoured. The lay-out of any site that is not practically level and the disposition of the houses on the site should largely be determined by the contours of the ground. By careful use of the natural configuration, a great deal of expense in underbuilding, cutting, and filling can be avoided. Existing natural amenities, such as trees and hedges, should as far as possible be preserved. It is desirable that consideration should be given not only to the lay-out of the particular area proposed to be developed in the first instance, but also to the manner in which the adjoining areas should be laid out. For this reason a larger area than that to be developed immediately should be contoured and the general lines of development for the whole area determined. In this connection local authorities will be well advised to consider the advisability of obtaining an option for the purchase of areas contiguous to the selected site.

The planning of the site and the disposition of the houses thereon should receive the utmost consideration, as it will generally be recognised that the success of the scheme will depend, not so much upon the design of each particular house, as upon the manner in which the houses are grouped and laid out on the site. The street frontages should be considered as a whole, and an endeavour made by recessing certain of the groups and by other architectural treatment to avoid the monotony of a long straight building line. Particular attention should be given to the disposition of houses so as to obscure as far as possible the view of back gardens and drying greens. This object may to some extent be attained at a later stage by the judicious planting of trees and shrubs.

The character of sites will vary to such a degree that in some cases it may be found convenient and economical to erect semi-detached houses, while in others the circumstances may be such as to make it preferable to erect the houses in groups. No group, however, should comprise more than eight houses. Provided the gradients of the ground will permit of it, this grouping is frequently desirable in the interests of architectural effect and at the same time considerable economy may be effected in the cost of erection. In schemes carried out by the Board the cost of the intermediate houses has been found to average about 10 per cent. less than that of the end houses. Where this method is adopted attention should be given to the means of providing a back or secondary access to the gardens of intermediate houses. This may be effected by pends through the houses or back lanes, as circumstances dictate. The through pend is the more satisfactory.

As a further means of reducing the cost of development, attention should be given to the possibility of grouping a number of houses around three sides of a quadrangle or other open space, with access by a footpath or narrow road from the main road. This method is useful for developing the interior land and has been found to add considerable interest and charm to the appearance of the scheme.

The lay-out and division of the front gardens of houses are worthy of consideration. Where an existing hedge or other suitable division is not available, the gardens should be separated from the road or footpath by a light and inexpensive low fence and hedge. This method may also be used to separate the various groups of houses, the sub-division of the gardens of the individual houses in each group being effected by means of low hedges.

It is further suggested that in some circumstances a much better effect would be obtained if the whole ground in front of a group of houses were left open or enclosed merely with a low hedge instead of being divided into a series of small plots.

ACCOMMODATION AND PLANNING OF HOUSES.

The types of houses which have been erected by the Board, some of which are illustrated in the plans given, contain the following accommodation, viz.:—Living-room, two or three bedrooms, scullery, bathroom, larder, coal store, etc. In a limited number of houses a parlour is also

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provided. The living-room or kitchen, being the one in which the family will mainly live, should receive the most careful attention in planning and arrangement. It should be given preference in the matter of aspect. The best aspect is towards the quarter from south-east to south-west, and a living-room should never be planned with windows to the north, north-east or north-west only.

The room should be as large and commodious as possible, and much of its comfort and convenience will depend on the arrangement of the fireplace, windows, and doors. The fireplace should be at right angles to the window, and the portions of the room about the fireplace and adjacent to the window should not have to be used as passage-ways from one door to another. The arrangement of doors on either side of a fireplace is both inconvenient and uncomfortable. If this room is to be used for cooking it should be provided with a range of suitable design with a boiler for hot-water supply. It has been found, however, where gas can be conveniently and economically obtained, that it is preferable to do the cooking on a gas-cooker provided in the scullery, thereby allowing the room to be more conveniently used as a living-room. In these circumstances the living-room fireplace may be fitted with an interior or hob grate with boiler for hot-water supply. This arrangement has much to commend it, as thereby better scope will be given for artistic treatment of the fireplace, which will then be more in harmony with the furnishing of the apartment as a sitting-room.

Where a parlour is provided, most of the purposes for which it is required will be served by a comparatively small room. It should take second place to the living-room, not only in respect of size, but also in the consideration of aspect. It should not be an entirely sunless room, and may face the west with advantage. As in the case of the living-room, it is important that the space around the fireplace should be free for sitting accommodation.

The great advantage of a scullery is that all the household dirty work may be carried out in it, thus enabling the living-room to be more easily kept clean and made more comfortable and tidy for family life. The scullery should be of sufficient size for this purpose, but it should not be such as would enable it to be fitted out and used as a living-room.

The convenience of the scullery depends very much on its planning, and the relative position of doors and windows is of great importance. The scullery should be fitted with a sink and tub with free working space round about. Space should be provided for a draining-board. A portable washing copper of not less than 12 gallons capacity should be provided, and connected to a flue in the chimney stack. Hot and cold water should be supplied to the fittings. Ample shelving accommodation should be provided at a convenient height. Where gas is available space should be provided for a gas cooker. Space should also be provided for a mangle and other necessary appliances.

It is an advantage to have a small area outside the back door paved with cement.

The bathroom should be a separate apartment, and this will as a rule be provided most economically on the ground floor. It is desirable that entrance to the bathroom should be obtained directly off a passage and not through the living-room or scullery. Hot water should be supplied to the bath, which should be of cast-iron, porcelain enamelled.

Every house should be provided with a larder, which, for purposes of proper ventilation, should have an opening window to the outside with, if possible, a north or north-east aspect. The opening should be covered with gauze to exclude flies. The larder should be entered from the scullery, and should be provided with ample shelving accommodation. Consideration should also be given to the provision of storage accommodation for the garden produce.

The coal store should be entered from the scullery, or, if placed outside, should be as near the back door as possible. It should be capable of containing not less than one ton of coal.

The house should be so designed that it will not be necessary to pass through the living-room to obtain access to the staircase. Such access should be obtained from the lobby, and it is also an advantage to obtain direct access to the scullery and garden from the lobby. The steps should not be steeper than 7-in. risers and 9-in. treads, and winding steps should be avoided as far as possible. A proper handrail should be provided. The stair should not be less than 3 ft. clear in width, and the arris of any right-angle turn should be well rounded or splayed, so as to facilitate furniture being taken up or down. The staircase should be lighted and ventilated at or near the top by means of an opening window or roof-light.

The minimum allowance for sleeping space should be 500 cubic feet for an adult and 250 cubic feet for each child under ten years of age. The largest bedroom should be capable of accommodating two adults and two children. No bedroom should have less than 80 ft. of floor area. Room ceilings should be reduced to the minimum, and where used should be so arranged that ample space is provided for furniture, and that the operation of dressing can be performed conveniently. The rooms should be so planned that the bed can be placed out of the draught from the window, and its position should always be indicated on the plans. Where possible, a press for hanging clothes should be provided in each bedroom. Where this cannot conveniently be done a shelf placed in a recess, with a frame for curtains and pegs, should be provided.

GENERAL.

In addition to the special points already enumerated, there are some general points which should be kept in view in the planning of houses, viz.:—

1. In arranging the plan it should be remembered that the greatest economy will result from the building being as nearly square as possible, the maximum floor area being thus obtained with the minimum length of walling.

2. Projections and outbuildings should be avoided, as they add considerably to the cost.

3. It is undesirable that any of the rooms should be used as passages; each room should be capable of being entered separately from the lobby or landing.

4. The fireplaces and flues should be grouped as far as possible—preferably in the centre of the building. This arrangement results not only in an economy in first cost, but tends to the conservation of heat.

5. Without unduly sacrificing the planning arrangements, every endeavour should be made to group the plumber's fittings together in as close proximity as possible to the boiler in the living-room, so as to simplify the provision of the hot-water service to the fittings.

6. The partitions on the upper floor should, in the interests alike of construction and economy, as far as possible be directly above those on the ground floor.

7. The position of presses should be carefully planned. It is not sufficient to designate as a press any corner that might otherwise be waste space, although such spaces should, of course, be utilised.

8. In designing the elevations it should be remembered that economy will best be obtained by a simple treatment of wall-head, while roof cuttings should be avoided as far as possible. Though it is undesirable to lay down hard and fast rules as to design, it will be recognised that the arrangement of furniture is easier when coom ceilings are avoided, and that expedition in erection is more readily secured when a level wallhead is provided.

CONSTRUCTION.

In the schemes carried through by the Board the following methods of construction have been adopted for the outer walls:—

(1) 11-inch cavity walls formed of two 4½-inch brick with a 2-inch cavity, the walls being bound together with galvanised iron ties.
(2) 9-inch cavity walls formed of two 3-inch concrete slabs built similarly to (1).
(3) 4½-inch brick walls with 9-inch thick brick piers at intervals.
(4) 2½-inch concrete slabs with 9-inch thick concrete piers at intervals.

The last two modes of construction have been adopted only in single-storey types of houses.

The walls have in all cases been rough cast externally with cement and plastered internally. The plaster has been applied on the solid wall in (1) and (2), and the walls in (3) and (4) have been strapped and lathed before being plastered.

In selecting materials, preference should be given to those which belong to and are most readily obtainable in the district. In certain districts under favourable conditions stone or concrete construction may be adopted with advantage and economy.

Generally it will be found that 11-inch brick hollow walls built in cement, rough cast externally and plastered on the hard internally, will give the best results, both from the point of view of economy and expedition in erection.

A damp-proof course of approved material should be provided in all walls, and it should never be less than 6 inches above the highest finished level of the ground.

In brick hollow wall construction the window sills should be in stone or concrete. Trouble has frequently been caused owing to damp penetrating at this point and showing on the inside of the walls, and attention is drawn to the necessity for care in the detail and construction.

In some cases it has been found that good results are obtained where the sills are not carried through the whole thickness of wall, and are protected at the back by asphalt sheeting carried along the bed to the outside face of wall.

The lintels will generally be constructed in concrete cast on the ground. They should be reinforced with iron rods where the opening exceeds 3 ft. 6 ins. in width. In brick hollow walls the lintels may be carried through the whole thickness of wall, in which case the top of the lintel should be protected by a piece of asphalt sheeting built into the inner 4½-in. wall and carried through the outer 4½-in. wall.

(*Continued on page 132.*)

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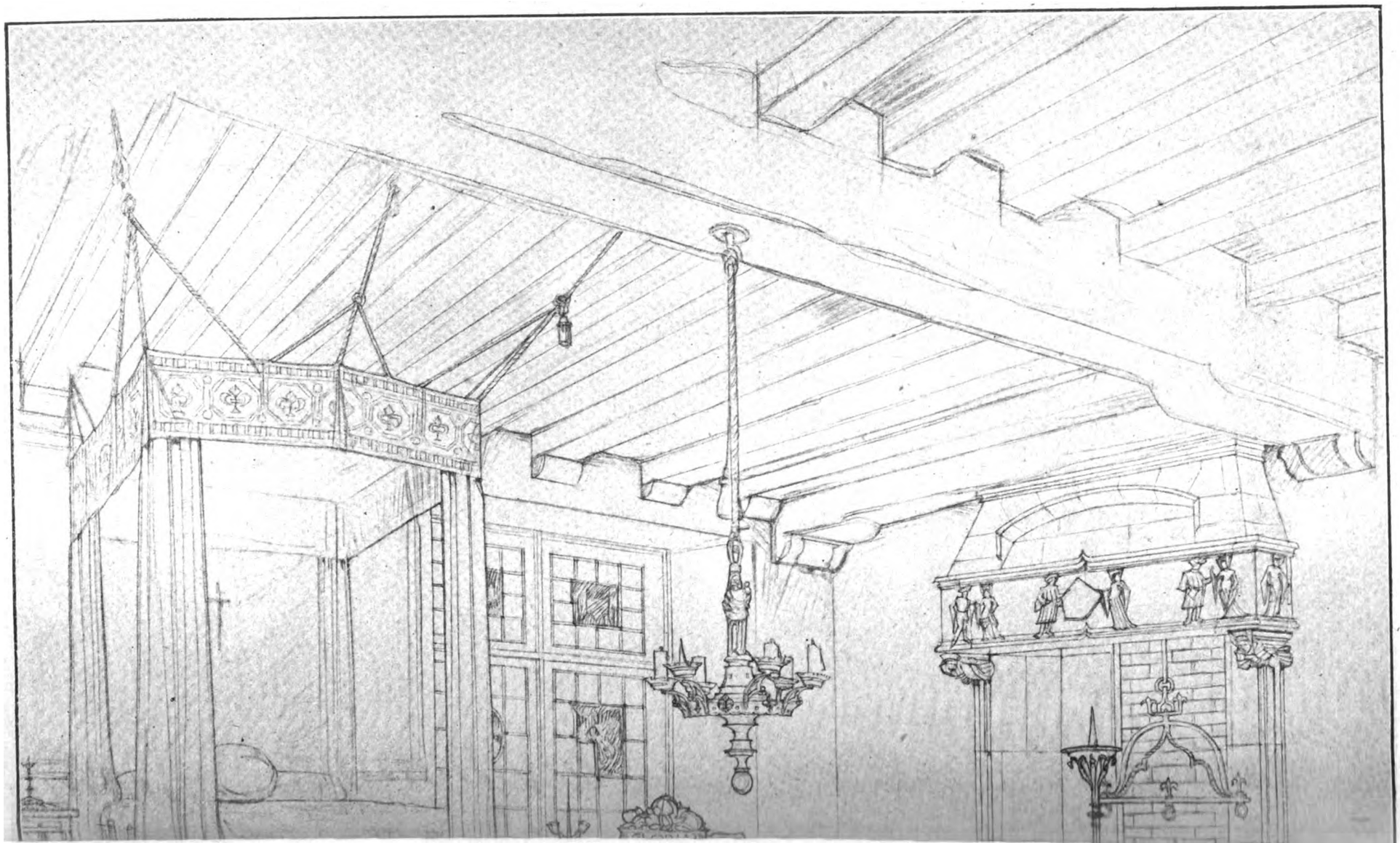

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CHOIR OF ST. MATTHEW'S CHURCH, BETHNAL GREEN, E.
Messrs. EDEN and FREEMAN, Architects.

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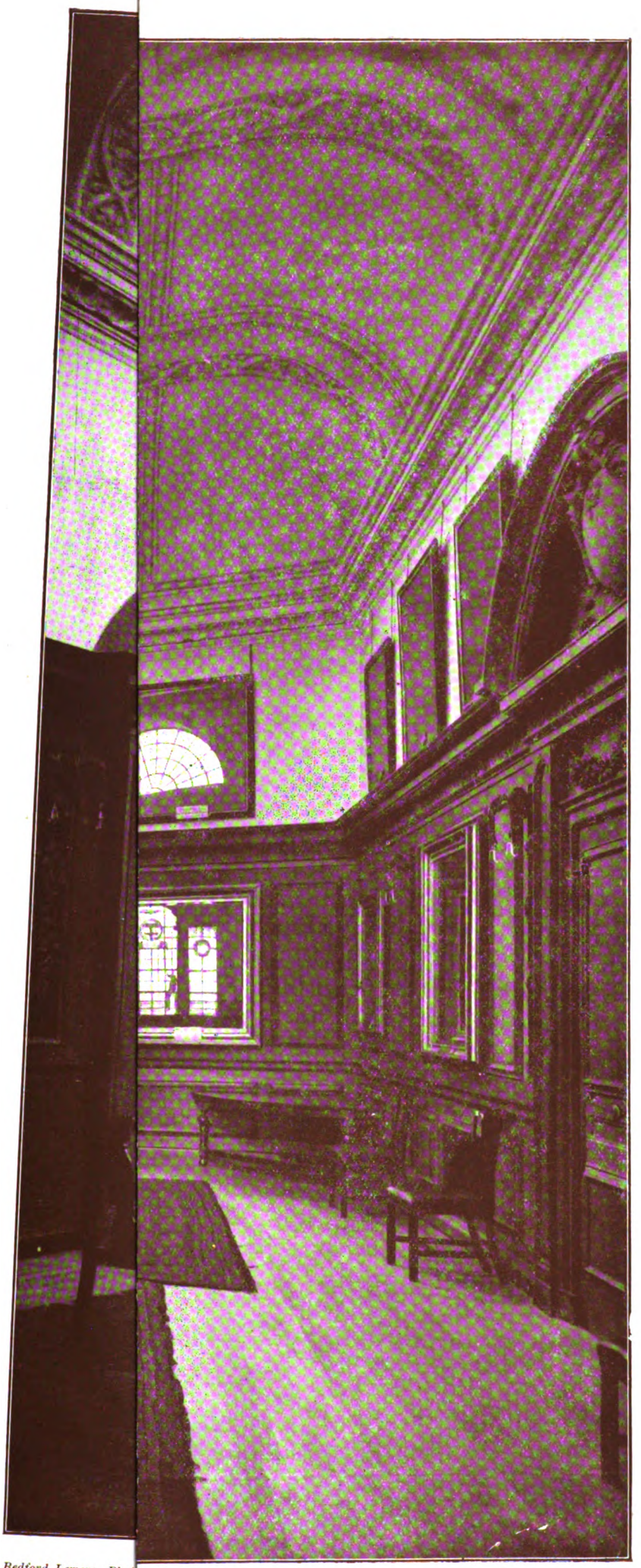

Bedford Lemere, Phot

ONDON, E.C.

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RUE DE CAUMONT, CAEN, NORMANDY.
An Etching by Miss ADELINE S. ILLINGWORTH, A.R.P.E.
(From the Exhibition of the Royal Society of Painter-Etchers.)

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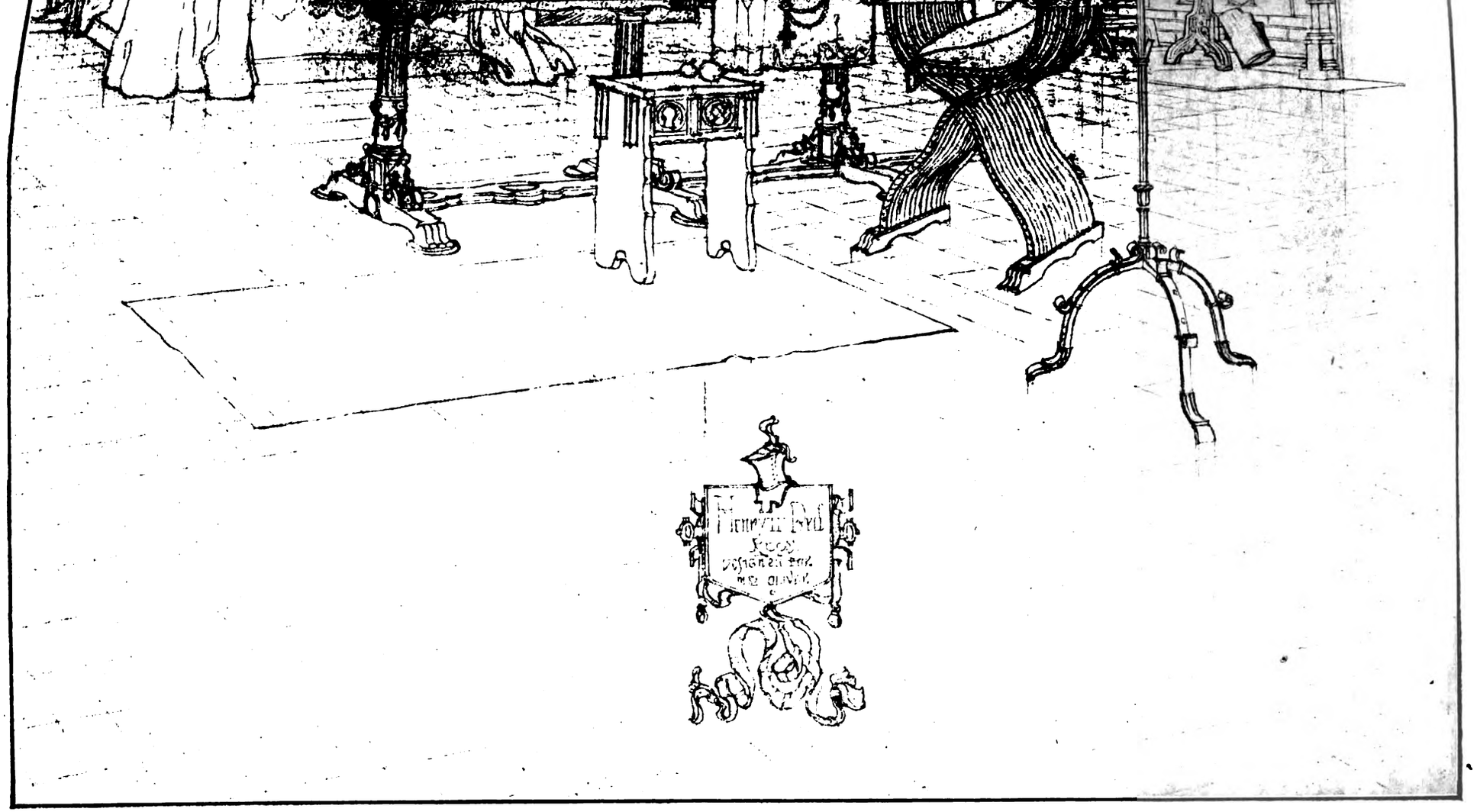

A BEDROOM, AFTER THE MANNER OF HENRI II., FOR MRS. OLIVER.
Lieut. MURRAY ADAMS-ACTON, S.G., Architect.

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Our Illustrations.

THE COUNCIL CHAMBER, CHRIST'S HOSPITAL, GREAT TOWER STREET, E.C.

The architect of the new building erected for Christ's Hospital in Great Tower Street is Mr. Arthur Blomfield, M.A., F.R.I.B.A. The offices were in Newgate Street before the school was moved to Horsham, and meanwhile they temporarily leased some premises in Aldersgate Street. The new offices were begun in 1914 and finished in 1916, when they were first occupied. The Council Chamber, which we illustrate to-day from the photograph now at the Royal Academy Exhibition, is panelled in oak. The pictures on the walls are the portraits of former Governors. The work was carried out by Messrs. Howell, Williams and Co.

CHOIR OF ST. MATTHEW'S CHURCH, BETHNAL GREEN.

The choir enclosure, stalls, panelling and eiddel-posts in the sanctuary were carried out during the incumbency of the late rector, the Rev. H. V. S. Eck. The church is a clumsy structure, and was rebuilt after a fire about the middle of the last century. Since the general arrangements did not lend themselves to the adoption of a screen proper the architects decided upon the low type of enclosure (which is usually to be deprecated), combined with a kind of triumphal arch to support the Rood with its attendant figures, and to give that dignity which the low enclosure necessarily lacks. The gallery and its supports have been painted black and white. The flooring of choir and sanctuary is of marble, that of the nave of black and white Belgian tiles. The stalls and choir enclosure are of mahogany inlaid with satinwood. The ironwork is decorated in gold and colours; the vases for the flower bouquets being of bronze. The architects are Messrs. Eden and Freeman, of 6, Gray's Inn Square, W.C.

RUE DE CAUMONT, CAEN, NORMANDY.

This etching, lent us by the artist, Miss Adeline S. Illingworth, A.R.P.E., was shown at the recent exhibition of the Society of Royal Painter-Etchers in Pall Mall. The view, looking up the street, is taken from the Boulevards, showing, to the left of the foreground, the florid church of St. Etienne le Vieux, chiefly belonging to the 15th century in style. A much mutilated equestrian statue on its walls is said to be intended for William the Conqueror. The building, very much neglected, has been secularized and long used as a warehouse but now a carpenter's shop. The church, of which the spire is seen in the distance, is that of St. Sauveurs (formerly Notre Dame), situate on the right side of Rue St. Pierre, and reckoned one of the triumphs of flamboyant architecture. Inside, the church is almost entirely of a plain Renaissance character. The tower is of 14th century date. St. Etienne le Vieux stands opposite to the Lycée, overlooking the Place du Parc, in a very prominent position. Adjacent to this end of the Rue de Caumont is the Musée des Antiquaries towards the right of the forefront of Miss Illingworth's sympathetic picture behind the old houses on that side.

A BEDROOM AFTER THE MANNER OF HENRI II.

This apartment, designed for Mrs. Oliver, in France, had to be schemed so as to conform with the typical mannerism of the style named worked out with the characteristic Gothic detail of the sixteenth century. The originality of the designer is seconded by the personal interest imparted to the work while carefully avoiding any mere archaeological oddities in furnishing the essential features of the room.

The will has been proved of Mr. William Henry Ramsden, surveyor, of Dewsbury, who left estate valued at £10,312.

Mr. G. M. M'Lintock, architect, Rothesay, has received an appointment under the Admiralty in connection with work being carried on at Rosyth, and he will be leaving Rothesay shortly in consequence.

THE SCOTTISH LOCAL GOVERNMENT BOARD AND HOUSING.

(*Continued from page 121.*)

An alternative method which has been adopted is to preserve the cavity and construct the lintel in two 4½-in. thicknesses, in which case the asphalt sheeting should be placed above the window casing.

On the ground floor these should be constructed in 4½-in. brick and built in cement mortar. In apartments having concrete floors, the partitions where carried up only one floor and not giving bearing for joists may be built off the concrete floor in brick on edge. The partitions on upper floor, where they are not carried up from below, should be formed with 2-in. concrete slabs. This is more economical than a lath and standard partition, and is also more hygienic.

Notwithstanding the possibilities of steel and concrete in the future the roofs will, for some time, be constructed in timber, and should be covered with boarding and felt. The pitch of roof should, as a rule, not be less than 45 degrees.

It will generally be desirable to provide overhanging eaves. These give a pleasing effect and also afford considerable protection to the walls. The ends of rafters and boarding should not be exposed, otherwise a considerable upkeep in painter work is involved. The wallhead may be formed with 4-inch thick brieze concrete slabs carried across the whole thickness of the wall and projecting 9 inches or thereby. These slabs will carry the wall plate, and the bell cast can be formed very readily and economically on top. The soffit of this projection will be rough cast along with the walls. This wallhead course, if increased in thickness at the back and reinforced with rods, will also serve as the lintel over the upper-floor windows.

The chimney heads above the roof line should be built in cement mortar and, if a weather-table is formed in concrete round the chimney stack, the slates or tiles may be pointed in below and the necessity for a lead flashing avoided.

Slates or tiles may be used for roof covering, and may be varied in the different groups of buildings with pleasing effect. Pantiles should only be used on roofs of the simplest design, as they are not suitable for cutting. Where slated roofs are used, the ridge, piend or hip tiles and chimney cans may with advantage be of grey colour in place of red.

The floors of the living-room and bedrooms will generally be constructed with wood joists and covered with ⅞-inch grooved and tongued flooring. Careful consideration is now being given to the use of concrete construction for floors. This mode of construction will probably be necessary to some extent owing to the scarcity of timber. The floors of the scullery, larder, and coal store should be of concrete.

The ordinary hung window will be found most suitable for Scottish conditions. The details of the window-case and sill should be carefully considered with a view to rendering the windows thoroughly weather-tight. The sashes should not be less than 1¾ ins. thick finished size. The windows should be divided up with astragals into panes. This does much to preserve the scale of the building, and it is desirable that the dimensions of the panes in the different sizes of windows should be kept fairly uniform. A metal or hard wood weather bar should be provided between the wood and the concrete sill.

Bound panelled doors should generally be used in the entrance passage and principal rooms. The doors in the scullery may be of lining and fitted with back bars and braces. The front and back entrance doors should be provided with weather bar to prevent driving rain getting entrance. As a further preventive of draught, it has been found desirable in exposed situations to provide a hard wood sill. This also allows of the door opening clear of the mat, which is an advantage, especially where the lobby space is restricted, and obviates the necessity for a mat sinking in the floor which would otherwise be necessary. Note. — The mouldings on doors, facings, skirtings, etc., should be as simple as possible, both for hygienic reasons and to minimise domestic labour.

Skirting should be provided in all departments. A picture moulding should be provided in the living-room and parlour, and is indeed an advantage in bedrooms also. The walls are thus prevented from being damaged by nails.

ROADS.

In determining the width of through or traffic roads, regard should be had not only to the traffic that will immediately fall upon them but to the traffic that is likely to be carried on them in the future. On the other hand, internal roads may be narrow in width and light in construction, provided that there is an ample distance between the buildings on either side. There is thus effected a saving in cost of construction and maintenance to the local authority, and it is better from the point of view both of the local authority and of the tenants that additional ground should be made available for gardens rather than be taken up in unnecessarily wide roads. Roads should follow valley lines rather than ridges, as thereby houses are more easily kept at a level well above the finished level of the road and drainage is more economically provided. Attention is directed to the appended illustration, Plan No. 4, showing cross sections of roads indicating the type of construction which the Board have arranged with various local authorities, burghal and county, as being sufficient and suitable. The roads in question will be taken over and placed on the Register as public streets by the burghal authorities concerned, or will be added to the list of highways in county districts.

SERVICES.

Drainage.—It is desirable that the whole scheme of drainage should be considered fully in the first instance in order that excessive excavation may be avoided and all reasonable economies may be exercised. In the schemes executed by the Board groups of houses have been connected to the sewer by one main house drain for each group, and the introduction of traps has been reduced to a minimum. Ample ventilation has in all cases been provided. The application of any particular method of drainage to local circumstances will, of course, need consideration in each case.

Water and Gas Supply.—In the case of water and gas services similar endeavour has been made to reduce the number of separate pipes and connections. Here again local circumstances will need to be taken into consideration in selecting the most suitable method.

DESCRIPTION OF LAY-OUT PLANS.

Plan No. 1 illustrates the lay-out of a scheme comprising 250 houses at Glengarnock, Ayrshire. The ground is practically level throughout, and this fact has permitted of the plan being set out on regular and formal lines. The houses are built in pairs or groups of four to six

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houses, with an average density of thirteen houses per gross acre.

Plan No. 2 illustrates the lay-out on a somewhat irregular site of a scheme comprising 150 houses at Cambuslang, Lanarkshire. The houses are built in pairs or groups of four houses with an average density of eleven houses per gross acre. The main road is the only one providing for through traffic. The subsidiary roads are formed with narrow carriage-ways, houses being grouped at the terminals. In this scheme also a number of houses has been grouped around a quadrangle with access by a footpath having a grass margin on either side.

Plan No. 3 illustrates the lay-out of a scheme comprising 100 houses at Gourock. The scheme had unfortunately to be carried out in two sections, as an additional number of houses was found to be required after the first houses had been provided. Accordingly, the lay-out is perhaps not so satisfactory as might have been obtained had the scheme originally been considered in its entirety.

Plan No. 4 shows cross sections of roads indicating the type of construction adopted.

TYPE PLANS OF HOUSES.

Plan No. 5 (Type A) illustrates a group of four houses and shows what is described as probably the most economical arrangement of plan. Passages are reduced to a minimum, and there is an absence of waste space. The end houses have two bedrooms on the upper floor, and the intermediate houses three bedrooms. The bathroom is a separate apartment entered from the scullery. This arrangement has the effect of reducing to a minimum the length of piping required for the hot-water supply from the range in the living-room, but the arrangement otherwise is open to objection on the ground of convenience. No provision has been shown on the plan for direct access to the back gardens of the intermediate houses. This may be considered necessary, and may be provided by means of pends through houses or by access paths. This type of plan is not suitable for use on north frontages. The elevations are treated simply with brick base and rough cast walls. Houses of this type, with slight modifications in the details of the plans and elevations, have been erected at Glengarnock and Gourock, and at various sites in Lanarkshire.

Plan No. 6 (Type B) shows a group of three houses designed with "through" living-room for use on north frontages. This plan involves a wide frontage, but is a type which will be found essential on most schemes. The entrance to the bathroom in the end house is from the entrance passage, and it will be noted that in this position the supply of hot water from the boiler of the living-room fireplace is obtained. This factor has determined the position of the living-room fireplace, which otherwise would have been better placed on the wall opposite the door. Its present position between the two doors does not conduce to comfort in the sitting space round the fire, and tends to interfere with the traffic between the front door and the scullery. The size of the third bedroom on this plan is rather small. The wallhead at the back wall is kept up the full height, and thus enables square ceilings to be provided for most of the bedrooms. The plan of the intermediate house illustrates an arrangement by which two of the apartments are provided on the ground floor; one of these can be conveniently used either as a parlour or bedroom. The provision of the bathroom on the upper floor is more expensive than if it had been provided on the ground floor, as additional length of piping is required. Houses of this type have been erected at Gourock and at various sites in Lanarkshire.

Plan No. 7 (Type C) shows a pair of houses with a parlour in addition to the living-room and three bedrooms. The bathroom is at the foot of the stair. Houses of this type have been erected at Gourock.

Plan No. 8 shows a group of four houses of "flatted" type, each house having an independent entrance. The entrance to the bathroom is from the passage, and each house has a good-sized living-room, scullery, etc., and two bedrooms. Good cupboard accommodation is provided. The ground-floor houses have direct access to the back gardens. The want of similar access in the case of the upper-floor houses is not greatly felt, as the main entrance is at the side, and therefore entrance to the garden can conveniently be obtained. Each house is provided with a separate back garden. Houses of this type have been erected at Glengarnock, Gourock, and at various sites in Lanarkshire.

Plan No. 9 (Types E and F) shows two types of houses built one storey in height. Type E provides two bedrooms in addition to living-room, scullery, etc. It will be noted that one of the two apartments is entered from the entrance porch, and could therefore be suitably used as a parlour. The bathroom is entered off an independent lobby, to which, however, access is obtained through the living-room, an arrangement not altogether satisfactory. Type F has similar accommodation to Type E, but has a small third bedroom in addition. The arrangement of the plan is on similar lines. The bathroom, however, is entered directly off the scullery, and this arrangement is open to considerable objection. The bathroom in both types of plans is in close proximity to the living-room fireplace, and the necessary hot-water supply piping is thus reduced to a minimum. The single-storey house, while it is easily worked, and therefore attractive to certain tenants, is not as a general rule an economical type to erect. In practice, however, it has been found that the examples illustrated compared favourably in cost with houses of similar accommodation built two storeys in height. This may be due to the ease and rapidity with which this type can be erected and to the small amount of scaffolding necessary. This type naturally involves wide frontages, and is therefore more particularly suitable for rural districts. Houses of this type have been erected in various places.

Mr. Taliesin Rees, architect and surveyor, has been added to the Commission of Peace for the borough of Birkenhead.

Plans for the extension of the technical school at Devonport, at an estimated cost of £20,200, have been sent to the Board of Education for approval by the town council.

A recent patent by Mr. J. Watson, Art Works, Youghal, Co. Cork, relates to ornamenting sheet glass, intended to be attached by a suitable cement to walls, ceilings, and other surfaces, and consists in painting the back with glass-painters' enamel, applying a fusible powder, and firing, whereby the design is covered with a protective coating and a rough surface is formed for the attachment of the glass to the foundation. A suitable fusible powder comprises five parts of crushed opal glass and one part of glass-painters' flux. A dull surface may be produced on the front of the glass by applying, before firing, a thin coating of glass-painters' flux and enamel, and lightly stippling.

DECAYING STONE.

AND ITS PRESERVATION IN ANCIENT BUILDINGS.

We continue, from *Building Industries*, in this issue our summary of the paper on the preservation of decaying stone—contributed, as we have already observed, by Mr. A. P. Laurie and Mr. Clark Ranken to the Edinburgh Section of the Society of Chemical Industry—and the following extracts are quoted from the latter half of the address dealing more directly with the conditions of precipitation within the stone. The authors tell us, in their general summing up, that we have to look for our successful preservative in one of two directions, namely, we must either find a single solution or liquid which will solidify within the stone and form a successful combining material without showing any tendency to come to the surface, or we must obtain the result by a process of double precipitation, by the action of one solution upon another. The difficulties of obtaining such a solution are sufficiently obvious, but it must not be ruled out of the ultimate possibilities. At the same time, it is very likely that the right method is to use a double solution, and therefore experiments on the precipitation within the stone itself require to be undertaken.

In order to test this question, the authors decided again to select precipitates in the first instance which, on account of their colour, would be fairly visible on the stone without any reference to their suitability as stone preservatives in order to get some guiding principles in the matter of such precipitation. The main difficulty of successful precipitation in the interior lies in the fact that the first precipitation will take place across the mouths of the capillaries, forming a diaphragm which will be more or less impervious to the passage of the salt molecules in either direction. At the same time we might expect to find the molecules of one of the salts might penetrate very much more easily than the molecules of the others, and therefore that the order in which the treatment of the stone took place would prove of considerable importance. In most of these experiments we did not allow the stone to dry completely before applying the second solution; in some cases applying the second solution directly before evaporation could have taken place, and in other cases allowing partial drying before its application. We also in certain cases sprayed the stone lightly with paraffin wax on both surfaces, so as to tend to keep the first solution within the stone and give the precipitation a better opportunity. The experiments on spraying the unwaxed stone showed that in every case the precipitation took place on the surface layer of the stone, and there was no proper penetration. The only successful experiments have been those made by means of the poulticing method. These results show that it depends very largely upon which salt solution is applied first, a fair precipitate being obtained inside in certain cases, while, when the treatment with the salts is reversed, practically no precipitation takes place at all. One of the necessary conditions, therefore, of success is to decide in which order the solutions are to be applied. It was decided to test the use of two different solvents for the salts. The idea of these experiments was to select two salts which will result when mixed in a precipitate, one soluble in water and alcohol, the other insoluble in alcohol. If the stone is first treated with the water solution and allowed to dry, leaving the salt precipitated throughout it, and, if it is then treated with the second salt dissolved in alcohol, the second salt will be able to penetrate freely into the pores, owing to the fact that the precipitation will be delayed owing to the insolubility of the first salt in alcohol, and therefore we may hope to get the precipitation taking place within the stone.

Further experiments in this direction lead to the conclusion that the decisive factor in precipitation in the stone is the order in which the stone is treated with the solutions causing precipitation. Practically perfect precipitation was produced in the stone when potassium ferrocyanide was the second solution used, whereas when it was the first solution there

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was practically no precipitation in the stone. The use of different solvents has certain advantages in so far that no waiting is required between treatment with the two different solutions. Waiting, however, is no real disadvantage owing to glycerine, etc., being unable to keep the first substance in the interior of the stone. The result, then, of these experiments on precipitation is to show that, in the first place, methods of spraying with two solutions in water seem to be very unlikely to yield satisfactory results, and that some method of poulticing is apparently essential for success so as to ensure deep penetration of the solutions. In the second place, if prevention of the salt crystallising on the outside can be obtained it is possible to get a fairly uniform precipitation within the stone. And, in the third place, even where salts are used which tend to crystallise on the outside the use of the two solvents results in a very uniform precipitation if the stone is not allowed to dry between the two treatments. While we do not pretend for a moment that these results can be regarded as more than preliminary we think that they have been sufficient to show that the problem has not been successfully solved by the existing stone preservatives, and also to show the complex nature of the problem and the directions in which a solution of it is to be looked for. These are as follows :—(1) The solution with which the stone is treated—or, if two solutions are to be used, the first solution with which it is treated—must be of such a kind that the resulting solid is uniformly distributed throughout the stone, and does not tend to come to the surface; it must, therefore, be a solution in which the surface tension tends to diminish instead of increase on concentration. (2) the resulting cement—whether due to the evaporation or solidification of one solution, or to the precipitation of one solution by another—must be a material which is not readily attacked by air, water, or the acids usually present in rain water. (3) None of the solutions used should act upon the natural cementing material of the stone, or should depend upon that action in order to produce a binding material. (4) The resulting solid—whether produced from one or from two solutions—must be one which has been proved by severe tests to act as a cement for particles of silica. (5) If two solutions are to be usd it is very important to study carefully the right order of application in order to ensure proper penetration, or to use two different solvents in the way already described.

PLANNING AN INDUSTRIAL ZONE.

An interesting paper on planning in an industrial district, submitted by the Philadelphia Chapter of the American Institute of Architects, was read during the Pennsylvania housing and town-planning convention recently held in Philadelphia.

The paper emphasises the fact that the basic ideas that are involved in the planning of a house or a town differ little, if any, from the broader application of ideas in the planning of a country. The difference is simply one of scale. The paper follows :—

A few months ago the Philadelphia Chapter of the American Institute of Architects initiated a study of local industrial housing conditions, moved to this action by the lack of proper living quarters for a considerable fraction of our population. It was assumed to be a merely local problem, and in that spirit the task was undertaken. But no sooner was the work commenced than this was seen to be a false conception, and soon we were visualising our task from a much broader point of view, showing full well that in no other way could a permanent solution of local difficulties be effected. For it is entirely reasonable that the location of one village can only be suggested after careful survey of the neighbouring factories and towns, actual or projected. Whenever possible workmen should have access to several, not to one, industry. The value of a park system, such as is being developed for Philadelphia, can be largely nullified by a neglected street plan, and by the uncontrolled growth of communities. These were a few of the many reasons why it was felt that it would be merely wasting time to devote study to any one division of the subject, unless it was first made plain what its relation might be to the problem as a whole.

A significant fact was at this time brought to our attention. Owing to inadequate railroad facilities much freight in less than carload lots, shipped to Philadelphia, was being unloaded at Easton and Reading, and from there brought to the consignee by motor truck. An examination of the map will show that a quadrilateral of approximately sixty miles square, the four corners of which are Reading, Easton, Trenton, and Wilmington, form a district, separate and distinct, both in a geographical and economical sense.

Accepting the situation frankly, we treated it as a metropolitan area, and sought and immediately found other reasons for this action. Motor traffic has developed to such an extent, both in number of units and average weight of load, that the use of the city streets for anything in the nature of through routing can no longer be tolerated. And even when city streets, such as the Delaware Avenue Boulevard, are especially constructed to bear these enormous loads, the congestion incident to a vast wharfage front forbids their employment for anything but short hauls.

We were then forced to consider the main lines of communication, studying in detail only the highways. In examining the geography of the district we clearly perceived that the great diagonal highways connecting Bethlehem and Wilmington, Reading and Trenton, and Coatesville and Trenton should be made to meet at a point on the left bank of the Schuylkill River near Conshohocken, and furthermore, all through traffic on the New York, Trenton, Chester, Wilmington, Baltimore line, in by-passing Philadelphia would traverse this distributing centre. The economy of operation and the saving of time and money incident to the establishment of such a distributing centre can best be understood by reference to the accompanying maps. Truckloads of explosives are now passing through the most crowded parts of Philadelphia. The grave risk to lives and property, the loss of time in the carrying of materials, is due to the fact that there is not a bridge across the Schuylkill River between Phœnixville and Girard Avenue available for the passage of a 5-ton truck. An astonishing situation confronts us.

The safety of our armies in France depends in a large measure on the speed with which ships may be built, loaded with munitions, largely by local manufacture, and sent to Europe. And the district where these essentials are produced is divided into two almost equal portions by a river gorge, which in the thirty miles of its length most important to commerce is unspanned by any highway bridge strong enough to carry 10,000 lbs.

The cost of establishing a crossing at Conshohocken, the cost and extent of new road and the repairing and putting in condition of old roads and bridges necessary to establish the system shown on the maps has been investigated, and a copy of the estimate accompanies the report. It is hard to believe that so small a sum of money and such a trifling amount of work can be deemed an obstacle to the execution of this project, the benefits of which will be immediate and vast.

The vital need of workmen's houses, the lack of which is seriously hampering our industrial activities, can only be studied in relation to highway transportation. There are not two problems. There is but one problem! It is not possible to determine the location or even the necessity of a village until after a thorough and far-seeing survey of the lines of communication, both major and minor, has been made. The narrow lanes straggling in from the surrounding country bearing their slow-moving loads of farm products, the roads for light travel connecting one group of houses with another and with the factories, the location of factories themselves, the heavy-duty trucking roads, the railroads and navigable streams, should be harmoniously arranged in their proper relations to each other. This can be accomplished economically, logically, and beautifully for the benefit of capital and labour alike, only by setting our faces against the ignorant and casual methods that have hitherto prevailed.

For it must be realised that there is such a thing as the planning of a country, and that it differs in scale alone from the methods employed in the planning of a house or of a town. Let us employ this knowledge as a mighty and benign influence in attempting to solve the social and industrial problems now demanding our attention.

PROFESSIONAL AND TRADE SOCIETIES.

Northern Architectural Association.—The annual report of the fifty-ninth session of this vigorous society records a membership of 173, the loss of three members being due to the deaths of two members and one student. Mr. James Bruce died in February, 1918. He joined the Association as an Associate in 1892, and was elected a member in 1897. He acted as hon. librarian since 1907, and always took a great interest in that work and in the welfare of the Association. Mr. G. P. Boyd died of wounds received in France in September, 1917. He joined the Association as a member in 1914. Mr. W. R. Isherwood was killed in action in France on September 6, 1917. He joined the Association as a student in 1913. Eighty-three members, associates, and students have joined the forces. The financial statement shows a balance in hand of £65 9s. 1d.

The Cape Institute of Architects.—The Calendar of the Cape Institute of Architects for the nineteenth Session, 1918-19, is the first to hand from any professional society, and a very satisfactory one; though at the Cape, as here, apparently, the architect has a rough time of it when Government departments take his work away from him. In one case the Board of a country hospital, after having engaged the services of an architect, decided to get the work done by the P.W.D., and as a result of enquiry it was found that the reasons alleged for this course were, that the hospital board would not have to pay architects' fees (they paid for the work done to date), and could get labour and materials cheaper, and further expected to reap other advantages from the employment of the Union Public Works Department, which the employment of a private firm would not yield. It was pointed out that someone had to pay for the architectural work, that it cost the Government a higher percentage than private practitioners received, that the Government could not get either labour or materials cheaper than other people, or any other advantage—it was rather the other way. In this case the Council's efforts produced no results. A committee has been appointed to consider the matter of the relationship of private practitioners to the P.W.D., and the works that should be done under departmental and private control.—The Cape Town Council having issued an advertisement calling for competitive designs, estimates and *tenders* for workmen's dwellings, the Council protested against the conditions as impracticable. No redress could be obtained from the C.T.C., but as the builders were also dissatisfied a joint meeting with the Master Builders' Association was held, and it was decided to ignore the invitation altogether. The response to the Cape Town Council's invitation was unsatisfactory to the Corporation.—Seven members of the Institute are or have been on Active Service. In spite of the Council's efforts, no progress has been made with the Architects' Registration Bill during the year. The balance-sheet and income and expenditure accounts are satisfactory, and the list of Members and Associates is a healthy one.

A faculty has been granted for improvements to the mortuary chapel at Flaybrick Hill Cemetery, Bidston, Birkenhead.

Baku (so named from the Persian word *badcube*, meaning "a gust of wind"), before the war, had an English colony of some size, with a church of its own. The town shows evidence in architectural remains of its owners before the Russians conquered it in 1859. In the eighth century it was under Arab domination, and from the sixteenth till the nineteenth century it was mostly in Persian hands.

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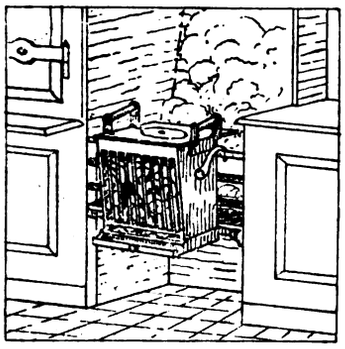
Correspondence.

THE "CALTO" COAL SAVER.

To the Editor of THE BUILDING NEWS.

Sir,—May I call your attention to an article that will meet the difficulty of householders in regard to the Coal Rationing Order? As you will see from the sketch, it is simply hung to the bars of the ordinary "Yorkshire" range (but can be used with others), and no fixing is required. Under ordinary conditions it saves 55 per cent. of coal; under rationing it will save 42 per cent. This has been proved by a year's trial, and it does it without reducing efficiency; in fact, it warms the room better, and has many advantages besides coal saving. It will heat the oven and boiler, and it will cook a dinner "on its own."



Saves 42 per cent. rationed basis. No fixing.

It may relieve some anxiety if your readers know the "Calto" will be on the market shortly. The price is expected not to exceed 20s. We are awaiting priority certificate to proceed with the manufacture, and this we expect the Coal Controller to recommend. He has the matter in hand.—Yours faithfully,

THEO. S. MCCALLUM, Civil Engineer
(of the Borough Engineer's Department, Huddersfield).
702, Leeds Road North, Huddersfield.

THE NEW LUXURY TAX.

Sir,—While the country is waiting for Committees to report on new methods of taxation, and letting valuable time slip by, cannot something be done to improve the method of collection of the present taxes?

Income-tax is now payable by a large number of industrial workers, and the assessment and collection entails a tremendous amount of work.

Might I suggest a means be devised for employers to deduct Income-tax from earnings when paying wages or salaries, similar to the practice in the Civil Service, to be paid into the Treasury within a short stipulated period, or by the purchase of stamps. This would facilitate collection, it would prevent evasion, and it would provide the Treasury with cash continuously.

As Income-tax for the year ending April 5 need not be paid in full until the following July, the saving in interest alone would probably amount to many millions.

It would also be convenient to a great number of Income-tax payers to have it deducted in small amounts rather than a heavy claim at the end of the year, causing them mental anxiety and the Revenue Authorities considerable trouble to collect.

The difficulties with regard to abatements could be overcome in most cases by the usual return being made, and the Surveyor of Taxes certifying the amount of duty payable, although possibly it would be preferable for a graduated tax to be collected on all incomes from employer and from employee by the same machinery as is used for National Insurance, and eliminate the excess profits duty payable by the employer, which, in its present form, is likely to restrict initiative and endeavour on the part of the capitalist.—Yours very truly,

G. HAVINDEN,
Managing Director, the Watford Manufacturing Co., Ltd.
Delectaland, Watford, Herts,
August 16, 1918.

COMPETITIONS.

WELSH AGRICULTURAL LABOURERS' COTTAGES COMPETITION.—The following particulars are sent us rather late in the day of the awards announced on August 7, the main heads of which we gave on p. 117 last week:—Lay-out plan of a local building site.—Prize of £5 5s., given by the Welsh Housing and Development Association, awarded to Mr. T. Gibb, Wigfa, Springfields, Aberavon. Total number of competitors, seven. Adjudicator, Henry E. Stilgoe, M.Inst.C.E., City Engineer, Birmingham. Cottages and living-in quarters for Welsh agricultural labourers.—Cottages: Class A.—Living-room, scullery, and three bedrooms. Prize of £50, given by Sir Alfred Mond, Bart., M.P., awarded to Mr. J. Austin Lloyd, Bella Vista, Powfort, Annan, from amongst eighty-three competitors. Class B.—Living-room, parlour, scullery, and three bedrooms. Prize of £50, given by Edward T. John, Esq., M.P., awarded to Mr. H. Heathman, 10, Station Road, Bristol, out of fifty-two competitors. Class C.—Accommodation at the discretion of competitors, but with a minimum of three bedrooms, planned entirely or mainly on one floor. Prize of £50, given jointly by the Right Hon. Lord Boston and Sir Robert J. Thomas, Holyhead, divided equally between Mr. J. Austin Lloyd, Powfort, Annan, and Miss E. D. Blacker, 20, Victoria Square, Clifton. Number of competitors, thirty-six. Design for living-in quarters for unmarried farm labourers.—Prize of £10, given by the Right Hon. Lady Boston, awarded to Messrs. Thomas and Morgan, Gelliwasted Road, Pontypridd. A consolation prize of £5 5s., given by Messrs. J. Cook Rees and D. M. Jenkins, was awarded to Mr. Herbert L. North, B.A., F.R.I.B.A., Llanfairfechan, North Wales. Number of competitors, twenty-five. The adjudicators in the foregoing competitions were Professor Patrick Abercrombie, F.R.I.B.A.; J. Cook Rees, Esq., M.S.A., President South Wales Institute of Architects; D. M. Jenkins, A.M.Inst.C.E., Chairman South Wales District Institution of Municipal and County Engineers; D. Lleufer Thomas, M.A., J.P.; and Lady Boston. The plans were on exhibition at the Arts and Crafts Exhibition at Neath during the Eisteddfod week, and arrangements are being made to exhibit these in every county in the Principality. A selection of them will also be reproduced in book form.

OBITUARY.

The death is announced of Mr. Cecil C. Brewer, a partner of the firm of Messrs. Brewer and Dunbar Smith, of 6, Queen's Square, W.C., which occurred on August 10 at Town End Farm, Radnage, and whose body was cremated at Golders Green last Wednesday. Mr. Brewer had been for some time in a delicate state of health. Among the more notable buildings designed by the firm have been the Passmore Edwards Institute in Tavistock Place, W.C., of which we gave a plan and two views in our issue of July 3, 1896; the Welsh National Museum, which they won in open competition, and which we illustrated on April 1, 1910; and Messrs. Heal's new premises in the Tottenham Court Road, which we gave in our issue of May 10, 1916. The firm have in hand an important addition to the FitzWilliam Museum at Cambridge, which, probably enough, has been delayed by war conditions. Mr. Brewer, who was elected a F.R.I.B.A. in 1906, won the Pugin Studentship in 1896, and the Godwin Bursary in 1911.

The death in Paris is announced of Professor Richard Norton, son of Mr. Charles Eliot Norton, professor of fine arts at Harvard. Richard Norton was director of the American School of Classical Studies in Rome from 1899 to 1907. He came of good English stock, and was related, on the English side, to the Sidgwicks and the Darwins. He was a trained archæologist, a classical scholar, a critic of fine art, and an adventurous explorer. He worked in Greece with Waldstein, with Boni in Rome, with Hogarth in Egypt, and on his own account in Cyrene. At the beginning of the war he organised the American Volunteer Motor Ambulance Corps, and during the Champagne battle in October, 1915, he disclosed the fact that the German gas apparatus captured dated so far back as 1908, thus proving that the barbarous methods of the enemy had been long premeditated. He received the Order of the French Legion of Honour and the Croix de Guerre for gallantry under fire, and was awarded the British Mons Medal.

Our Office Table.

A movement has been started at Cape Town to establish a memorial to the late Sir Starr Jameson. The proposal is to build and dedicate to his memory the central hall of the University Buildings, which are to be erected at Groote Schuur. The site chosen is in view of the Rhodes Memorial, on the slopes of Table Mountain. Towards the £100,000 required for the building of the hall Sir Abe Bailey has given £10,000, and other large donations have been promised in South Africa. Contributions are solicited from British admirers of Sir Starr Jameson, and cheques may be made payable to the Jameson Memorial Fund.

Gopsall Hall, near Market Harborough, formerly the seat of the Earl of Howe, one of the stately homes of England, with many historic associations, has been bought by Mr. S. J. Waring, head of the firm of Waring and Gillow, the purchase price being between £300,000 and £400,000. Gopsall Hall was built at a cost of £100,000, and the demesne about 171 years ago extended to 30,000 or 40,000 acres. The mansion is situated in the centre of a deer park of 700 acres, including a fine herd of deer; and contains many family portraits and other pictures by old masters. One of the most interesting features is the chapel, with communion table, seats, and wainscotting of carved cedar. Here, it is stated, Handel composed his "Messiah." The mansion, which stands amidst fine grounds, which have a temple by Roubiliac, was erected by Charles Jennins, a friend of Handel. The original manuscript of the oratorio composed at Gopsall on one of his visits was one of the treasures of the house, where also hung two pictures bequeathed by the musician to his host. To a relative of Jennins, Penn Assheton Curzon, fell Gopsall, the library and a collection of works of art, including the portrait of Handel by Hudson. Penn Assheton Curzon married Lady Sophia Howe, Baroness Howe, after the death of her father, the celebrated admiral, and in their family Gopsall Hall has since remained, Earl Howe succeeding to it on the death of his father eighteen years ago.

An interesting ceremony took place last Sunday afternoon at Menai Bridge, when the Bishop of Bangor consecrated for public burial the whole of the little Island of Llandysilio, part of which only is now used as a burial ground. Church Island has from time immemorial been one of the many natural attractions of Menai Bridge, and the little church built on the higher part of the diminutive island has been the centre of Church services for generations, though in the summer months the services of late years have been conducted in the open air as the church will not hold more than about a hundred people. The church is dated A.D. 636, and was of wattle-work construction. The whole of the roof is supported by the original couplings of native oak, black and hard as iron, and resting on the original wall built to sustain them, the mortar of which was made of clay. Later, when lime mortar came into use, the original couplings were built in. The church was erected 1,282 years ago. The original seating consisted of rough axe-hewn planks of oak six or seven inches thick, one end being fixed in the walls of the church and the other end resting on solid oak blocks, also rough-hewn. These unfortunately were removed before the present rector took charge of the parish. The present communion rails were given by the late Dean Edwards when Bangor Cathedral was "restored" many years ago, and originally formed the Cathedral communion rails.

Manchester T.C. Buildings Committee have passed plans for a fire station at Crumpsall.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

ALNWICK.—For water main in Prudhoe and Stott Streets, for the Alnwick Urban District Council:—
Macdonald, J. £41 7 6
(Accepted.)

GRATELY (HANTS).—For alterations at teachers' house, for the Education Committee of the Southampton County Council:—
Bourne and Jenkinson £114 15 6
(Accepted.)

HOVE.—For the external painting of the public library, for the town council:—
A. W. Leney, 49, Goldstone Villas, Hove, £65 (accepted).

LLANDILO.—For construction of a channel near Nantribo, for the Llandilo Urban District Council:—
Thomas, C., and Co. £58 0 0
Thomas, C., and Co. 29 0 0
Morris, S. P. 28 0 0
Clark, L. (accepted) 25 0 0

LONDON.—For sundry works, for the Metropolitan Asylums Board:—
Accepted tenders:—Leavesden Asylum, repairs to hot-water boiler in No. 1 block, Fraser and Fraser, approximately £30; Goldie Leigh Homes, supply of new hot-water boiler for Borstal House, Wontner-Smith, Gray, and Co., £32 9s.; Caterham Asylum, supply of 50 new tubes for calorifiers, J. Russell and Co., £50.

NANTWICH.—For the construction of about 140 yards of 9-in. sewer, with two manholes, in Pillory Street, Nantwich, for the urban district council. W. Williams, 26, Pepper Street, Nantwich, engineer and surveyor:—
Mulcaster, W., Haslington, near Crewe* £198 9 6
Emery and Co., Aston, Birmingham 195 15 0
(* Accepted.)

OSSETT (YORKS.).—For erection of shed at destructor works, for the corporation:—
Lockwood, A., and Sons, Ossett £90 0 0
(Accepted.)

RISHWORTH (YORKS.).—For construction of reinforced concrete gauge basins and a small mass concrete dam, and for laying of about 200 yards of 18-in. cast-iron pipes, in the township of Rishworth, near Halifax, for the Wakefield Corporation. C. C. Smith, M.I.C.E., Town Hall, Wakefield, waterworks engineer:—
Schofield, J., and Son (Wyke), Ltd., Wyke, Bradford .. £12,359 13 8
Mitchell, A., Basinghall Square, Leeds 8,201 13 2
Firth and Co., Byram Arcade, Huddersfield 7,368 10 6
Northern Concrete Co., Ltd., New Street, Huddersfield.. 7,216 15 7
Parker and Sharp, York .. 6,575 8 10
Simon-Carves, Ltd., Mount Street, Manchester 6,053 3 9
Firth, J. M., Todmorden* .. 5,941 0 9
Turner, T., Frogmore, Blackwater 5,657 11 6
Wade, C., Luddendenfoot .. 3,645 11 7
(* Accepted.)

SHEFFIELD.—For steel chimney at Neepsend powerhouse, for the city council:—
G. Cooper (accepted).

STOCKTON.—For painting at Ropner Park and recreation ground. Accepted tenders:—
Ropner Park.
Croft and Roe £116 15 0
Recreation Ground.
Atkinson and Winn £112 10 0

WALTHAMSTOW.—For painting the exterior of the Forest Road Schools, for the Education Committee. H. Prosser, M.S.A., architect to the committee:—
Dean, J. and J., Walthamstow, E.17 .. .. £212 0 0
Fuller and Son, Walthamstow, E.17 .. .. 212 0 0
Blow, S., Ltd., Tower Hill, E.1 194 0 0
Sands, J., Walthamstow, E.17* 189 0 0
(* Accepted.)
For painting the exterior of the Gamuel Road Schools:—
McBride, F. E., Walthamstow, E.17 .. .. £227 4 6
Fuller and Son, Walthamstow, E.17 .. .. 195 0 0
Blow, S., Ltd., Tower Hill, E.1* 115 0 0
(* Accepted.)
For renovating the interior of the Pretoria Avenue Girls' and Infants' Schools:—
Fuller and Son, Walthamstow, E.17 .. .. £198 0 0
Sands, J., Walthamstow, E.17.. 160 0 0
Blow, S., Ltd., Tower Hill, E.1* 157 0 0
(* Accepted.)
For providing and fixing a new boiler at the Chapel End Infants' School:—
Boyd and Co., Well Street, W.1. £90 0 0
Watkin and Son, Wood Green, N.22 .. .. 87 10 0
Wontner-Smith, Gray, and Co., Sun Street, E.C. 79 4 0
Davis, F., Leyton* (a) 74 0 0
(* Accepted.)
(a) Builder's work and covering to boiler included.
For providing and fixing a new boiler at the Marsh Street Boys' School:—
Watkin and Son, Wood Green, N.22 .. .. £89 0 0
Boyd, J. D., and Co., Wells Street, W.1* 73 0 0
(* Accepted.)

LIST OF TENDERS OPEN.

BUILDINGS.

Aug. 24.—Painting the exterior of 58 houses at Walbottle, and building a short length of brick wall at Westerhope.—For the Newburn Urban District Council.—T. Gregory, Surveyor, Council Offices, Newburn-on-Tyne.

PAINTING.

Aug. 27.—Painting wood and iron work at the guardians' institution at Strood.—For the guardians of Strood Union.—Specification and forms of tender of the architect, G. E. Bond, 384, High Street, Rochester. Tenders to J. E. Povey, Clerk.

Sept. 5.—Painting and decorating at the isolation hospital, Beddington Corner, near Mitcham Junction.—For the Wandle Valley Joint Hospital Board.—E. J. Gowen, Clerk, Council Offices, Purley.

Lieutenant W. H. Eley, surveyor to the Newmarket Urban District Council, has received a cordial welcome from the council after his illness following service in France.

A first prosecution in England for permitting dancing after 10.30 by electric light was heard at Matlock last Wednesday. The manager of the Chatsworth Hydro was fined 10s. for holding a ball on Bank Holiday night by electric light.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

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A. J. P.—No.

PLASTER.—We know nothing of the firm.

S. H. L.—Forwarded to last known address. 2. No.

A COMPETENT LANCASHIRE ARTIZAN (Grimsargh, Preston).—You are nothing of the sort, but some dirty German or pestilential pacifist, afraid to put his name to his scrawl, and smarting from our shot that evidently went well home.

E. R.—Our recent past issues in which the Local Government Board and R.I.B.A. premiated designs for workmen's dwellings have been illustrated are those of April 10, 17, 24, May 1, 8, 15, 22, 29, June 5, 12, 19, 26, and July 10 and 24. The fourteen numbers can be had post free for 7s. 6d.

Plans are being prepared by John Eaton, Sons and Cantrell for a school clinic for the Ashton-under-Lyne Education Committee.

Mr. George Waller Willcocks, C.B., M.Inst.C.E., of Roehampton, Surrey, late Chief Engineering Inspector to the Local Government Board, formerly Assistant Engineer on Railway Construction in Hungary, has left £6,971.

The Rochdale Education Committee has received no tenders for the painting of the exterior of schools, and only two for the distempering of school buildings during the August holidays. They are again inviting tenders for the latter work at Christmas.

The death took place on Friday week at Brynmawr, Pennsylvania, of Mr. Charles Herbert Scott, consulting engineer, of Gloucester. Mr. Scott, who was a member of the Institution of Mechanical Engineers, was an authority upon linoleum manufacturing machinery, and at the time of his death was visiting a firm of linoleum machinery manufacturers for the purpose of perfecting some of his latest patents.

An interesting Roman relic has been unearthed on Inveresk Hill, Musselburgh, near the site of the *Prætorium* which crowned the historic ridge. This is a portion of Roman pottery of bright red clay (*Terra sigillata*), being a piece of a *mortarium*, a broad, shallow basin used for bruising and preparing vegetables for cooking. Happily the portion preserved is the most characteristic bit of such a vessel—namely, the broad, overhanging rim, with the typical, slightly-depressed, and protuding spout, flanked with two panels each, containing the maker's name in two lines of raised letters, which are so well preserved that consultation of an authority on the subject places the dish as belonging to the second century of the Christian era.

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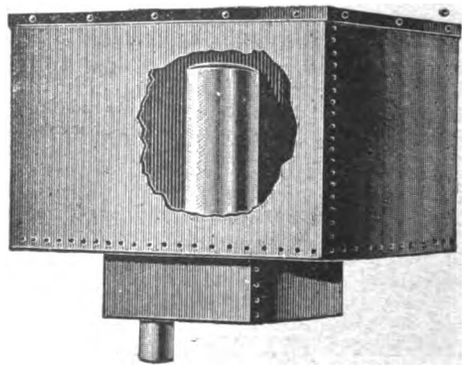

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August 28, 1918. Volume CXV.—No. 3321.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

Church of All Saints, Basingstoke, Hants. Interior View of Nave looking East. Mr. Temple Moore, F.R.I.B.A., Architect.

Bedford Farm, Johannesburg, South Africa, for Sir George Farrar, Bart. Two views. Mr. Herbert Baker, F.R.I.B.A., Architect.

Putteridge Bury, Luton, Bedfordshire. Built for Mr. T. M. Clutterbuck. Elevations and ground plan. Messrs. Sir Ernest George, R.A., and Yeates, FF.R.I.B.A., Architects.

Currente Calamo.

The futile one-day strike of the flappers on the Tubes is, perhaps, not encouraging enough to warrant another early outrage on public convenience by its servants, who are fast becoming its tyrants, and as contemptuous of its remonstrances as the bandolined young persons behind the railway refreshment-bar in the days when Dickens wrote "Mugby Junction." That the bacillus of the strike epidemic is killed, however, is not in the least likely, nor will it be till the stupid, all-enduring public learns its lesson, and that is to strike in its turn. Who will organise a public strike? We want a strong committee to arrange a monster indignation meeting in Hyde Park, and then meetings all over London to explain to its citizens that a very little self-sacrifice, scientifically directed, would teach our strikers and our profiteers a lesson they would not quickly forget. Funds would be needful, but a very small subscription would effectively finance an Anti-Strike and Profiteer Society to take on the job. The work should be done in sections, and one band of brigands tackled after another. Pledged to walk to town or stay at home for a month when buses and trains stopped, to buy no bread, or meat, or groceries, or clothes, for another, and so on, in given districts carefully mapped out, and to send to Coventry all traitors in the camp for the rest of their lives, the now harried millions who are exploited and sat upon—too probably with the aid of German money—would ere long teach the self-seeking scorners of every shred of common decency or patriotism at least as much honour as there is among kindred thieves. Blessed indeed throughout all generations would be the Deliverer from the British Bolshevists!

A service contract which is to run only "during the pleasure of the Crown" seems rather a mediæval survival in these our democratic days. Yet there is no doubt about it, as was shown by the recent decision of the Court of Appeal in the curious case of "Hales v. the King." There the plaintiff, or, in our old law language, the "suppliant," claimed as against the King damages for wrongful dismissal and some arrears of salary. He had been employed as an Admiralty clerk in the department of the Director of Transports at the weekly salary of 30s. for the first month, and afterwards with an increase of 5s. weekly. Being dismissed without notice, he claimed for this and for arrears of the increased salary, a total of £3 15s. The case was heard before Mr. Justice Avory, who, on the authority of a decision in 1896, held that all servants of the Crown were engaged subject to a right of the Crown to dismiss them at pleasure, so that there was no legal need for any notice. As to the arrears of extra salary, this would only be recoverable if it had been recommended by the head of the department, which had not here been proved. So the suppliant lost his case all round. The Court of Appeal confirmed this ruling by refusing to interfere with the judge's finding on the facts, and by holding that, even if a special contract had been proved, it could not bind the Crown, because there was a custom that a servant of the Crown held only during the pleasure of the Crown, so the appeal was dismissed with costs. Seeing that there are now many thousands of people engaged upon contracts of service in the Government departments who are all, in law, servants of the Crown, it is as well that this practical legal point should be made clear, for it is not one that would have naturally occurred to the many workers of all kinds who now know they cannot claim any notice and only hold "during the pleasure of the Crown."

It is due to the Municipal Building Department and to its president, Mr. Holzer, that in the design of the new Augsburg gasworks a gas expert, a well-known firm of gas engineering contractors, and a capable architect collaborated, so that not only the purely technical side but also the æsthetic external appearance received adequate consideration. The two old gasworks, dating respectively from 1848 and 1862, were old-fashioned and together were only able to furnish 24,000 cubic metres daily, whereas the maximum daily demand had been 31,000 cubic metres. The new works are upon a new site at Oberhausen, and will generate 50,000 cbm. at first, and can be extended so as to generate 200,000 cbm. The plant was started on December 31, 1915, and the arrangements for handling, transporting, and storing the coal are very complete. The Rank reinforced concrete coal bunkers have a capacity of 11,000 tons, so that there is twenty-four hours' supply for a daily production of 100,000 cubic metres of gas, while there is additional storage in the retort house. An elevated electric transporter supplies the retort house, where vertical retorts are employed. The gas generated passes through two mains 800 m/m dia. to the gas-holders, and thence to the main, 1 metre dia., which supplies the town. The total cost, inclusive of the purchase of the site, has been about £250,000.

Some forty-eight years ago a correspondent of the *English Mechanic* (p. 174, No. 501), in the course of a discussion on the respective merits of burial and cremation, suggested "burying upwards," space thus being unlimited, whereas it *is* limited burying downwards, in blocks of concrete, which would in time form an immense solid structure that might serve the purpose of a defence tower. In a subsequent issue Mr. Thos. Willson, architect, then of 71, Mildmay Road, N., wrote reminding readers of his plan of "Pyramidal Burial," a model of which was exhibited in the Great Exhibition of 1851, in which on a small plot of eighteen acres decent and economical interment was provided for five million bodies. Our own preference would certainly be for cremation; but, in view of the most certainly present insanitary condition of some of our older metropolitan cemeteries, which have become almost as "intra-mural" as the parish churchyards they were meant to supersede, the merits of "Pyramidal Burial" might perhaps be not unprofitably discussed by authorities concerned. From 1834 to 1841 seven cemeteries were laid out at a cost of £352,550, all of which have had to be enlarged, and many others added. The present price of land renders further additions almost prohibitive, and every year adds to a difficulty which is pressing. Any interested will find Mr. Willson's plan well described in a work entitled "The Great Exhibition of 1851," published by George Routledge and Co. that year.

"Poverty Bottom," by Professor W. Somerville, of Oxford, an Associate of the Surveyors' Institution, is a very timely pamphlet issued by the Board of Agriculture, which tells the story

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of the conversion of a poor, derelict farm into a productive and remunerative holding. Professor Somerville, who made the experiment, had come to the conclusion that much land in England—especially that on chalky soils—was producing less food than was possible. Bucks has 144,000 acres and Berks 179,200 acres of thin soil on the chalk. "Poverty Bottom," the farm selected for experiment, is in Sussex, near Newhaven; it was "untenanted and unstocked, and appeared to be near the bedrock of infertility." Its 530 acres (80 cultivated, the rest grass) had been let at about 6s. per acre. It was taken over in February, 1911, and the pamphlet gives the result of seven years' farming. Valuation of sheep, which was £231 0s. 7d. in 1911-12, was £658 16s. 7d. in 1916-17; of cattle respectively £343 15s. 9d. and £1,545 13s. Sales of grain were £139 11s. 5d. in 1912, and £641 6s. 6d. in 1916. The financial result, after deducting rent and 5 per cent., which might have been got without exertion by investing the capital in a good security, was an average yearly income of £338 (besides a free house). The pamphlet can be obtained, price 2d. post free, from the Board of Agriculture, 3, St. James's Street, S.W.

The extended use of steam road vehicles and the increasing number of drivers without previous experience who are being taught to handle them has created the need for a handbook on the general management of various types of steam wagons. Such a handbook, which has just been issued, is "The Steam Wagon Manual" (2s. net or by post 2s. 2½d. Temple Press, Ltd., 7-15, Rosebery Avenue, London, E.C.). The driving, upkeep and repair of a steam wagon are matters introducing entirely new factors to those who hitherto have had experience only with internal-combusion engines, and this book will, therefore, be of the greatest value to those who find themselves in charge of a vehicle with the general construction of which they are not familiar. Not only are there many new drivers of steam road vehicles, but also new owners and users, and for their guidance also this book has been written. The contents are divided up under practically the following headings: —The purchase of a steam wagon; equipment of its garage; steam production and regulation of power, with general driving hints; legal requirements for the different types of vehicles; daily work and overhauling; diagnosing and remedying faults; the complete dismantling and overhauling of engine, transmission, frame, wheels and body, and its re-erection; various points concerning laying up a steam wagon, weather protection, maintenance contracts, etc., and a concluding chapter on the use of rubber tires.

Norton Rural District Council have appointed a committee to go round the district with an architect and prepare estimates and plans of the cottages required.

Mr. William Hurst, of St. Mawes, Leamington, a member of the Institution of Civil Engineers, for some years resident engineer for the London and North-Western Railway Co., has left £8,937.

WANTED, A SEWAGE DISPOSAL AUTHORITY.

We are disposed to second the endorsement by our contemporary *The Engineer* of a suggestion made by Mr. J. E. Willcox, M.I.C.E., at the recent conference at West Bromwich of the Association of Managers of Sewage Disposal Works that we ought to have a properly staffed sewage testing station akin to that at Lawrence, Mass., U.S.A., for the correlation of research work and the control of all matters relating to sewage disposal.

It is perfectly true that during the past twenty years considerable progress has been made in the methods of sewage treatment, but it is equally the fact that the country is little the better for it; in the first place, because the present controlling body, the Local Government Board, as in other matters, has not advanced with the times. As with regard to building by-laws and housing, its own rules are like the laws of the Medes and Persians—unalterable, except at its own suggestion; and those having knowledge of scores of costly and disastrous mistakes of the past, which might have been avoided by the help of skilled advice, will agree with us that the duty of the Local Government Board to see that no mistakes are made, and to refuse sanction unless the schemes are suitable and adequate, is somewhat perfunctorily performed. Moreover, the Board is not capable of undertaking the work of research as it is carried out at Lawrence. It has neither the staff nor the facilities for the necessary investigations, and it is quite incapable of deciding or regulating the experiments necessary for arrival at the best mode of treatment of the sewages of different localities.

Any such controlling authority as Mr. Willcox suggests, however ably served centrally by experts, would probably equally fail to deal locally with special problems, unless it had the power to set up sub-stations capable of studying the same. We should probably still muddle things as they are muddled now in the smaller areas, where the local engineers and surveyors, knowing little themselves about sewage disposal, are called on by their authorities to design schemes. Those men do their best under the conditions by which they are governed. They look about and see what other authorities have done or are doing, and then copy or adapt, not seldom ignoring the special needs of trade waste and configuration of areas, gradients of the sewers, excess or the reverse of surface water, and other prime elements of success or failure. They are, moreover, not unlikely to be misled by the more or less empirical propositions of well-meaning inventors and syndicates, who from time to time proclaim the arrival of one or other of the perfect sewage utilisation or disposal schemes, of which not a few during the past fifty years have come and gone, with little other result than failure, and costly additions to the local burdens of towns saddled with them.

Mr. Willcox contends that the new station should be set up and maintained by the State, and we think he is right. It will not do to make it a mere subsection of the proposed new Ministry of Health which some of our reformers and legislators are in such raptures about. It is quite true that one great object to be gained by the research performed will be the assurance that the sewage of the country will be rendered innocuous, but we hope to see much more than that effected. We have at last made a good start on the road to the home production of the food of the people. We know that, given proper conditions, it is perfectly possible for England to feed herself, and never again to suffer in health or pocket, as we are suffering to-day, under the menace of an enemy. We have, we trust, made up our minds that the land shall no longer be labour-starved. But only of less moment is the production to the utmost extent of fertilisers of the soil, and if such an authority as it is proposed to establish did nothing more than, in connection with sewage disposal, to save us from some of the wild-cat schemes of nitrogen production which have been tried sporadically, and in places where the actual available nitrogen has been so small that it cost more to recover it than it was worth, and gave us as high a percentage as possible of that which is now thrown away, or expensively produced where it is unavailable, it would indeed have justified its formation.

Only let us have no dead-heads in the new department of the sort we are cursed with in almost every "control" we have been saddled with during the war. And no discouragement of individual research—rather encouragement where we can spot such men as Mr. William E. Clifford, of Wolverhampton, in connection with the determination of the type of tank best adapted for the sedimentation of sewage and the prevention of short-circuiting and eddies, or the well directed efforts of Mr. J. E. Farmer at the Croydon Sewage Farm, with the view of ascertaining the best methods of utilising sewage on the land. There are others with no axes to grind who, with little present encouragement, are working in kindred directions—some more actively than others—in connection with the activated sludge system, which though, perhaps, not free from difficulties, has undoubted possibilities which might ere this have been realised but for the war. But, while ignoring no individual genuine worker, we certainly seem at present to lack the co-ordination of effort and the facilities for promulgation and free discussion of results which the proposed central body might give us, thus preventing the overlapping of activities and the re-exploitation for personal ends of past failures. But its real work should be essentially research, aided by the co-operation of the best brains available, and sufficiently financed by the State to command their adhesion and give opportunities for real labour.

COMPOSING AND DETAIL CURVES IN GREEK ARCHITECTURE.*

By W. J. DELBRIDGE, A.R.I.B.A. (F), President of the Cape Institute of Architects.

"Art is the realisation of the ideal and the idealisation of the real." This is the dictum of the nimble G.K.C. in his extravaganza "The Flying Inn." Mr. Chesterton is not only an artist in words, he is also an artist in things, and of this the saying I have quoted is a most happy instance, which has a peculiarly apt relation to Greek architectural art. The Periclean age is, for us, a realisation of the ideal in form and proportion, and there is no reason to doubt that it meant an idealisation of the real, to those who shaped its perfections in sculpture and building. Idealists who have endeavoured to record the impressions that the remains of that bygone time leave on the mind, assure us that the forms "seem locked in an eternal sleep," also that "their essence seems one with eternity." If our view of the principles on which that art is based is correct, these impressions may be removed from the realm of the ideal to that of the actual. "The principles of art

* From the Kalendar of the Cape Institute of Architects, 1918-19.

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are immutable, its phenomena are variable, and susceptible of almost infinite diversity." The base from which all true architecture is reared is geometric. Geometry is the philosophy of form. Greek architecture of the Periclean age is instinct in every part with that philosophy, and it is that aspect which is presented to you this evening. It is not the only aspect, and I would that we had leisure to deal with other aspects of philosophy that go to the making of Greek architecture at its best. I cannot, however, forbear reference to one such, since it assists understanding of our subject. I refer to the lack of passion and romance that is evident in sculpture of the period. Neither joy nor sorrow is seen on the faces of the figures in the Pan-Athenaic procession. The reason of this is, I think, not far to seek. The Greeks revelled in perfection of form. The cultivation of a Stoic calm assists the display of such perfection. The ecstacies of human passion displayed in the living flesh are not fitly subjected to the art of the sculptor. We have an instinctive revolt from marble smiles and agonies. From this consideration we derive glimmerings of Greek doctrine regarding the limitations of art. The geometric basis which is our theme is not, however, significant of limitations only, as some suppose, but is, in far greater degree, suggestive of opportunities of design, limited only by the compass of numerical notation and the forms coincident with its units. A somewhat prevalent idea concerning Greek forms is that their profiles were outlined freehand by some inspired artist. That idea is apt to overcloud study of the period with much mystery of ignorance. The ascertainable facts lend no support whatever to that view. The architecture of the Periclean age emerged from mystery in the sixth century B.C., and ceased to be a living art within three hundred years. Its influence persists—we see it in the building fashion of the day, more particularly in Neo-Grec.

A superficial view shows it to be in the main an affair of straight lines, but we are to consider how marvellously these were disturbed by the introduction of subtle curvatures. Our title suggests a grouping under the two main heads of (1) Curves of Composition, and (2) Detail Curves. Under the first heading I propose to deal with composing, perspective, and construction curves, and under the second with curves of moulded detail, ornament and shadow, with passing references to sculpture and colour.

At some of these inter-related aspects we must be content merely to glance, and the whole subject is too large to treat in anything but an introductory fashion in a single evening.

The Parthenon was the highest expression of Greek architecture. I will now draw mass diagrams of its end and principal elevations and ask you to note the simple curves of composition, and as a check to the setting-out the chief dimension to the nearest English foot. Three times the height of the columns (about thirty-four feet) will give us the length of the front (about one hundred and one feet), so if we draw to scale about a setting line three equal circles to touch and surround these by straight lines, we shall get a very close approximation to the proportion and dimensions of the column sub-division. Upon the centre of the upper bounding line draw a circle with diameter of half its length and this will give at its topmost point the total height of the superstructure (about twenty-five feet). From the topmost point of this circle, mark downward along the centre line a length equivalent to that of the diagonal of the whole mass, as determined by a rectilineal feet frame round all the circles, and from the point thus obtained describe an arc, passing through the crown of the semicircle. The points of intersection between this arc and the sides of frame will define the slope of the pediment to the topmost point, and the mass of the superstructure. The sizes of the two main parts of the design are thus established in an exceedingly simple manner by related circles, and the relation of one of our initial circles to its circumscribing square will give us the third major part of the design, namely, the stylobate.

This we can set out on a sub-division diagram, together with the most important sub-division, the columns. The lower diameter of the columns is obtained in the simplest possible way, by taking half of the total length of the top step of the stylobate. We have already said this was about one hundred and one feet, half of that, say, fifty feet. There were eight columns, each, say, six feet three inches, which is the actual diameter of the internal ones, the external being one and a half inches more for reasons, presently to be given. The spacing of the columns is easily arrived at. The edge of the second column inwards, nearest to the centre line of front, is coincident with the vertical centre of the outermost circle of composition for the columnar sub-division. The position of this column is of great importance in relation to the plan and construction, for it fixes the proper position of the external faces of the walls of the building, and the length of the stones required to span the space, from these to the columns of the lateral fronts. The setting out suggested fixed the positions of the four outer columns, for the position of the outermost are naturally determined by the dimensions. There are three ways of settling the position of the four middle columns. One is by increasing the spacing from that adopted for the external pair, to provide the widest opening for the central vista, into the shrine and treasury respectively, the second to give an equal spacing, and the third to give a spacing identical with the external pair, providing always that the central opening is not the least. Practically equal spacing was adopted in the example before us, and this is probably the best solution of a difficulty that naturally arises in settling the columnar disposition of a pedimented front. It is interesting briefly to consider that difficulty. From a statical point of view, it would appear advisable to provide a central column, because the greatest weight of superstructure lies about the centre line but, æsthetically, this is objectionable, because it does not permit of a central vista. This method was, however, adopted in the large and massive temple at Agrigentum. Both from statical and perspective points of view, the large central intercolumnation is manifestly inadvisable. The eye also demands that the corners of the structure show a construction at least more massive than that within the front, but this consideration should not have undue weight in the case of a pedimental front for, as already stated, the greatest incidence of load occurs in the centre, and the thrusting tendency of the raking pediment lines is strongly counteracted by the preponderance of horizontals in the entablature. We have thus built up, by composing curves of the simplest character—by circles—the main lines of a design which is, apparently, a mass of straight lines, which, in the order of priority, may be classed as horizontal, vertical, and inclined. Now the eye abhors a straight line, that is to say a dead straight line, so we are to consider how the greatest artists, whose work we are considering, modified these straight lines. We shall consider this most completely when we deal with shadow curves. Meanwhile, please note that in our mass composition all the main vertical lines are arranged upon rounded or broken surfaces, and those inclined from the vertical plane of their direction, while all the horizontal and inclined lines are upon planes and parallels. Please understand, also, that you and I are not following the text books but, greatly daring, are trying to imagine ourselves in the places of Ictinus and Callicrates, and by the side of Phidias. For the present, then, let us meet criticism of our straight-lined design by stating that we will introduce perspective curves to correct our straight lines. This we commonly call "entasis," and is always given outwards and upwards, so as to prevent horizontal lines from appearing to droop, and verticals from the tendency towards appearing concave, in the direction of the masses they define. These curves of perspective are arranged with much skill and in a manner we shall fully consider later—they are so slight that their very existence has been questioned by superficial observers; there is, however, no room for doubt, though as little as one inch in a hundred feet horizontal is given. The vertical entasis is dealt with in diagrams. Of purely constructional curves there are few, but among these may be mentioned the curves to the necking of the caps, used either to define the limits of the circular portion of the capital to be turned in the lathe, or to form a rebatement for the introduction of a metal band—probably for both. Hollow curves are found at the joints between the marble drum sections, out of which the shafts of the columns were built up. These joint curves occupy the larger portion of the sectional area, and it is probable that the curve on the top of each block was arranged so as to form a shallow basin for the retention of water, which, acting upon the square wooden dowel provided at the axis of the column, caused it to swell in its seating and so keep the frustra concentric and in rigid position till the super-imposed weight was applied and kept the parts steady. The opposing curve at each joint would prevent capillary attraction from emptying the dishing. The whole arrangement would reduce labour and assist in securing a perfect mortarless joint when the fluteless frustra were ground into position with sand and water to await the labour of the skilled workmen, who must have wrought the outline entasis and changing curves of the flute sections upon the marble blocks when in position. In at least one instance, a colonnade has been found with the flutings finished upon the topmost drum only.

We thus conclude our survey of the larger composing and general curvatures and proceed to curves of detail. The varieties in detail are extremely numerous. Isolated pieces of detail, such as stelæ and acroteria, have the ornament manifestly composed within such well-known forms as the triangle, often equilateral, the base straight and the sides curvilinear. Isolated pateræ compose within the full circle. Pediment sculpture naturally composes within the straight lined triangular figure. Ornament over moulded surfaces is always composed within repeat units formed within approximation to duplication of the sectional outline. Thus the "leaf and dart" ornament occurs upon the Cyma Reversa, the "egg and tongue" upon the ovolo, and the anthemion upon the Cyma Recta, the very lines of growth in the flowing ornament corresponding to the character of the section outline, where compound curves are used. In the larger compound curved surfaces the scroll is freely used for connecting the units. Generally speaking, all mouldings, whether of simple or compound curvilinear outline, are composed of portions of conic sections, the general character of which both in section and elevation treatment can be sufficiently determined from an inspection of our diagrams. Of conic sections the favourite is the parabola, and the setting out of this, in its application to various outlines, follows the general principles laid down in my demonstration, from diagrams regarding the definition of column outlines. The hyperbola is rarely used or, if used, its presence is difficult to determine by analysis of existing remains. The ellipse is much favoured, owing to its adaptability in closed curvilinear forms, the most conspicuous instances of application being to the "egg ornament," the setting out of which I now illustrate. An interesting example is referred to under shadow curves. Generally speaking, the forms are partial and occur in contrast to their most decided opposites. Perhaps the most interesting piece of geometric setting out is that afforded by the volutes in Ionic work, and is obtained by a simple unwinding curve, done in the manner sketched. In the most celebrated of the Ephesian temples to Diana, the curve was developed from a round eye, the face upon which the curves were carved was then tilted outwards at the top to meet the foreshortening difficulty, which difficulty was sometimes met in another way, i.e., by making the eye of ovoid form, and thus obtaining a curve, elongated in the direction of its height, which would permit of its being carved upon a vertical surface.

(*Continued on page 150.*)

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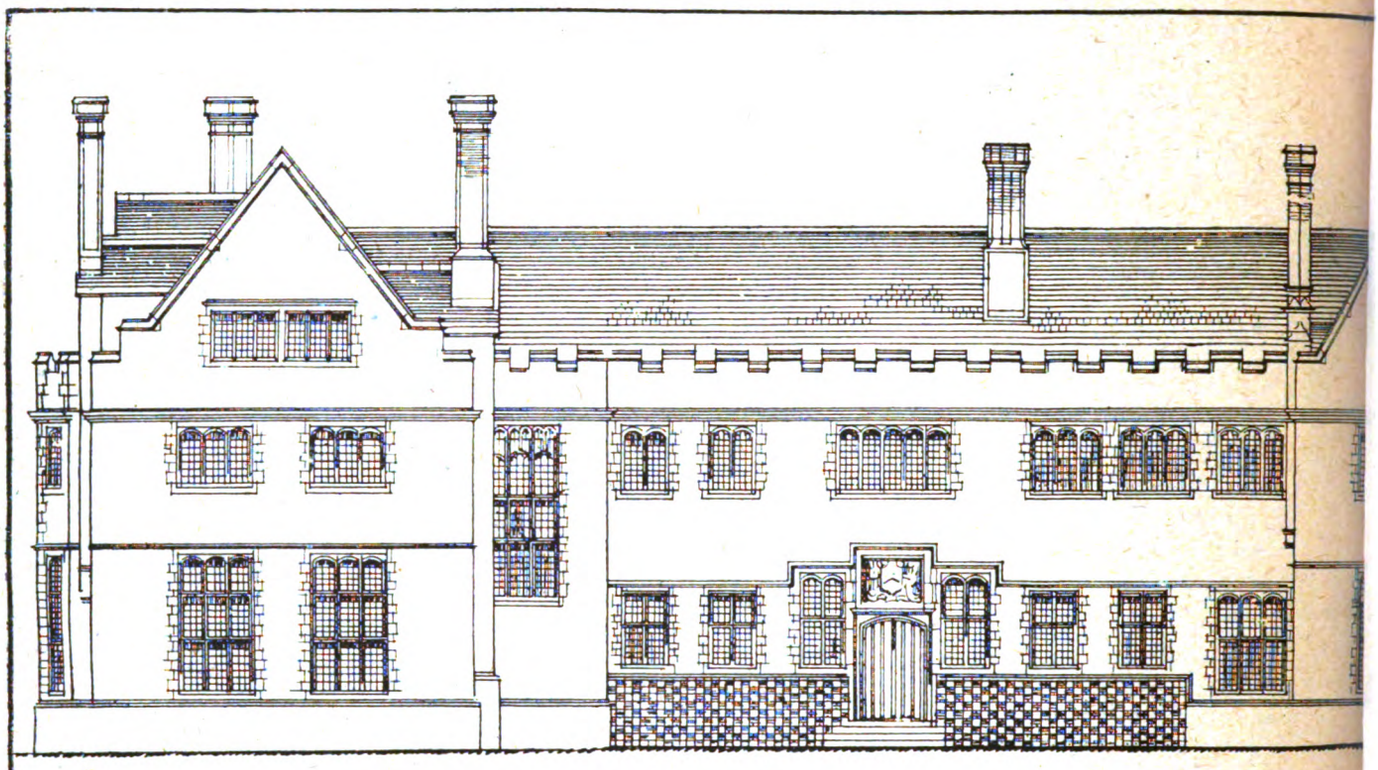
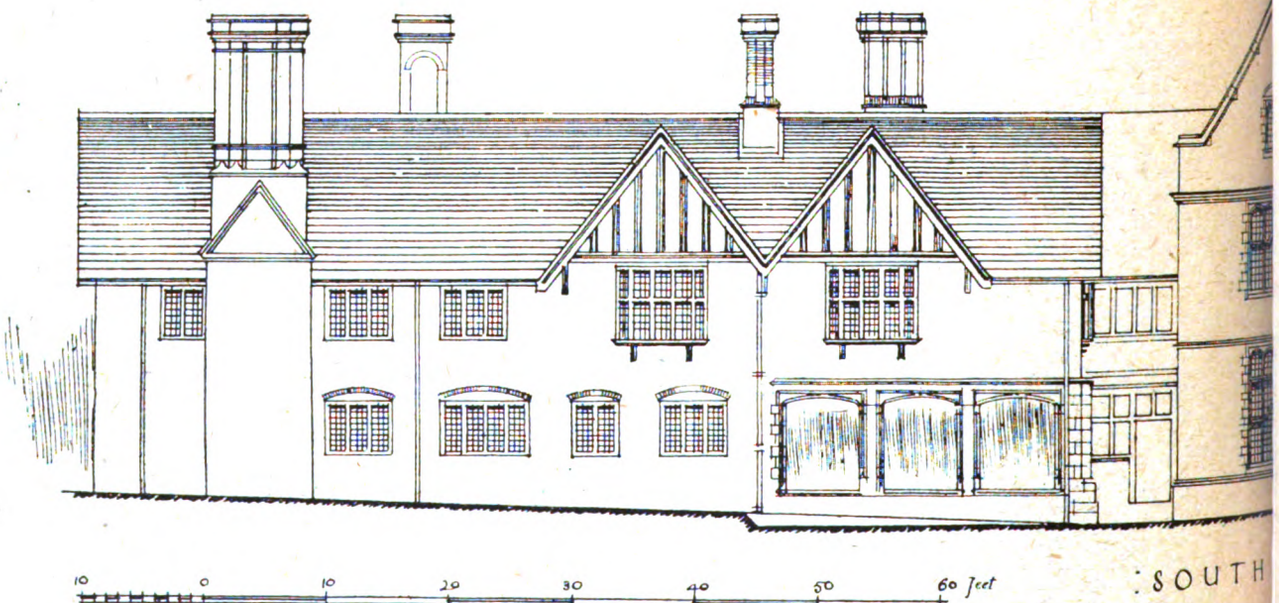


NORTH

PUTTERIDGE BURY. LUTON. BEDFORDSHIRE.
THE RESIDENCE OF T·M· CLUTTERBUCK ESQ.



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SOUTH

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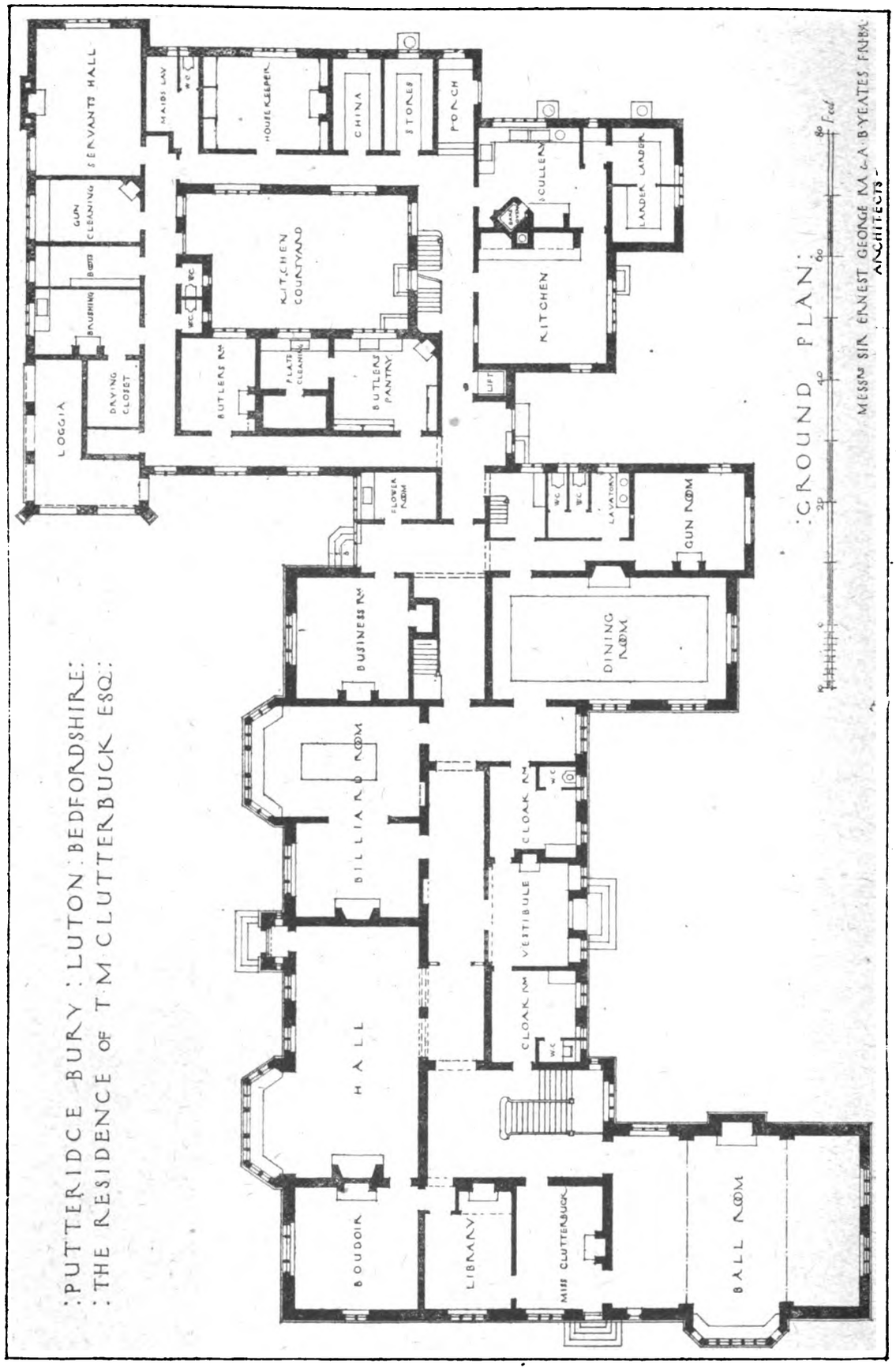

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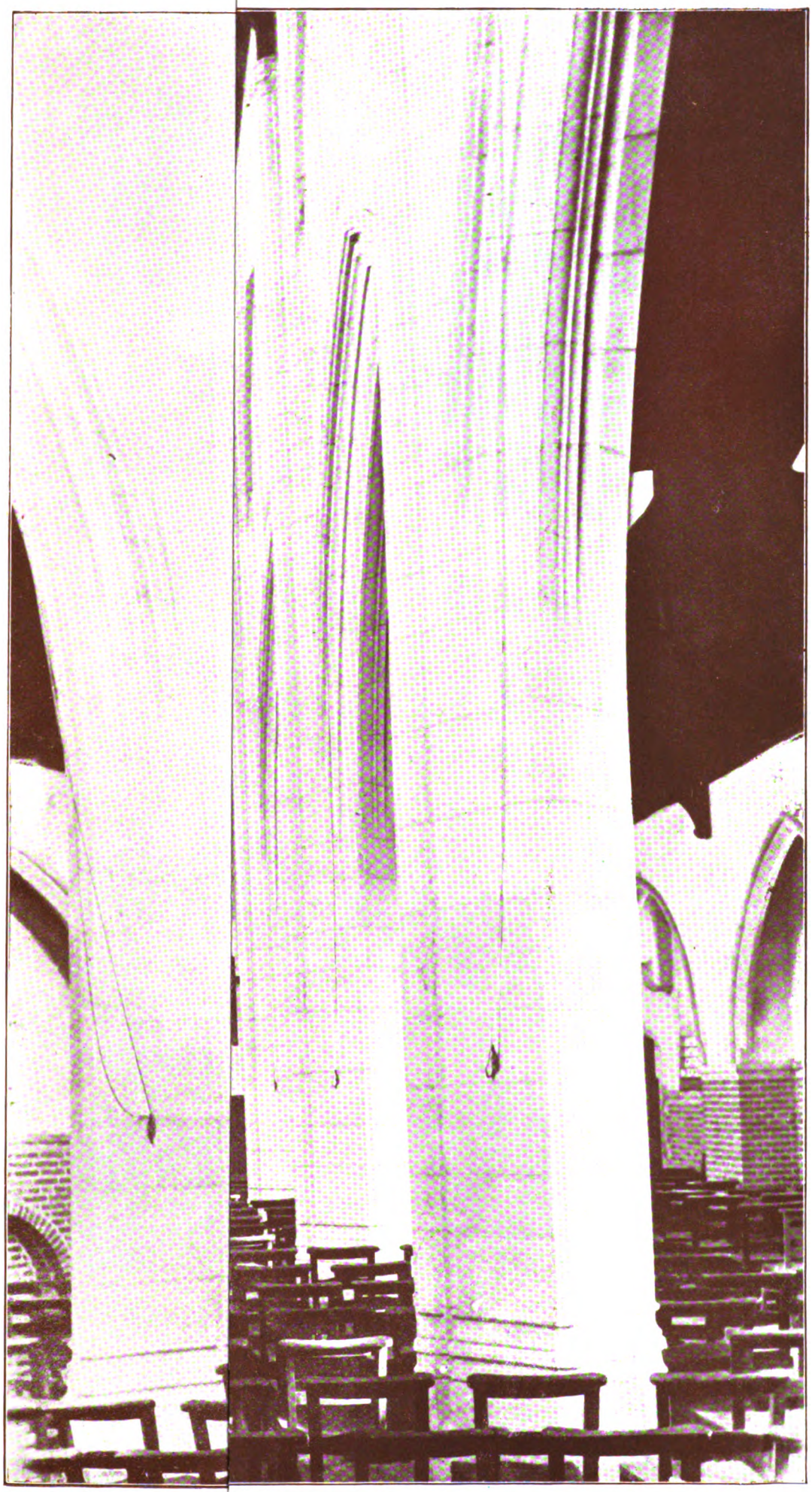

Eric Guy, Photo.]

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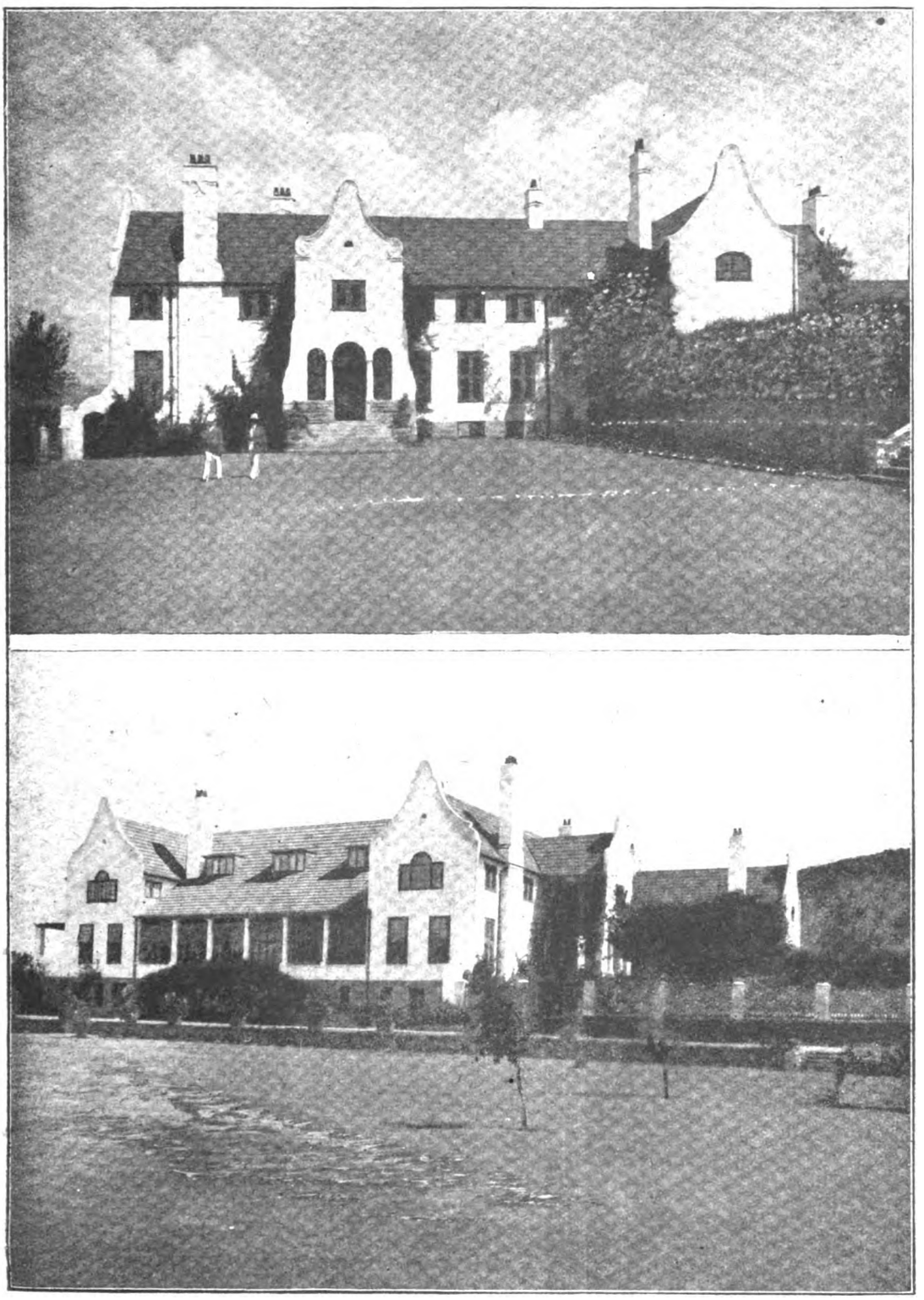

BEDFORD FARM, JOHANNESBURG, SOUTH AFRICA.

For Sir George Farrar, Bart.

Mr. Herbert Baker, F.R.I.B.A., Architect.

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EVATION:

VATION:

MESSRS SIR ERNEST GEORGE R.A. & A.B. YEATES F.R.I.B.A.
ARCHITECTS

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Our Illustrations.

CHURCH OF ALL SAINTS, BASINGSTOKE, HANTS. VIEW LOOKING EAST.

The exterior views of this church shown at the Royal Academy this year, by the architect, Mr. Temple Moore, F.R.I.B.A., were reproduced in our issue of July 3 last. To-day we devote a double page to the interior, photographed looking East. The picture was also in this exhibition together with another, showing the Lady chapel and organ loft in the choir, and will be published from the photograph from the same architectural gallery in an early issue of our paper. The plan appeared with the outside pictures, and a brief description was printed with the illustrations.

BEDFORD FARM, JOHANNESBURG.

This South African house, designed by Mr. H. Baker, F.R.I.B.A., is one of many of a similar kind carried out of late years under his personal direction. The walls externally are plastered, and the two photographs reproduced to-day give an idea of its size and architectural character. The open verandah, of course, forms a great feature in all South African residences. The lower view shows how, in this farmhouse, the verandah extends between the two gabled wings, overlooking the drive.

PUTTERIDGE BURY, NEAR LUTON, BEDFORDSHIRE.

We are enabled to give to-day the working drawings of the chief elevations and ground plan of Putteridge Bury, built ten years ago by Sir Ernest George and Yeates, for T. M. Clutterbuck, Esq., and is four miles from Luton. It is a brick house, thin bricks (six to the foot) being specially made at a brickfield on the estate. They are of a pleasant broken colour. Chequer work is also introduced. The windows are mullioned and there are moulded stone arches and oak panelling, beamed ceilings, and an early treatment generally. The contract for this work was carried out by Messrs. Holland and Hannen.

COMPOSING AND DETAIL CURVES IN GREEK ARCHITECTURE.

(*Continued from page 139.*)

The introduction of detail curvature is now to be dealt with in connection with curves of shadow, and concerning these we are forced to resort largely to demonstration from the diagram drawings before us, since mere words cannot fully convey the significance. The text books help us very little here, and the views now given are largely personal. To begin with, we note on our building how it grows upwards through its sub-divisions, from high light to deep shadow. The bases of our columns bask in direct sunlight and in reflected light from the brilliant pavement, and the whole mass scintillates with the crystal brilliancy of marble. Even the voids between our columns are to some extent luminous in the bright semi-tropic light, diffused, refracted, and reflected in a thousand ways by the glassy polished surface. This is corrected by heavy colouring on the ceiling coffers. Time will weather our marble to a golden cream tint, but we must help to subdue the spear-like shafts of light at each sun-lighted edge. First we flute our columns, taking care to let the depth of the flutings increase as the column rises, and thus to relate them to the upward increasing shadows of our voids between the columns by section. curves of concave ovals, separated from one another, not by harsh lines of light, but by soft ridges of curved shadow-toned surface. We relate these to curves of shadow below our saucerlike cap by flute endings, like the imprints of finger tips. These cap curves are remarkable. The best idea of the whole cap is gained if we remember that it is like a slice from a square loaf, standing on a saucer, the diameter of which is equal to the side of the slice. The slice bears the weight—its corners cast heavy shadows on the saucer and shaft below. The centre of its sunlit side allows a high-lighted point of the curve below to peep out and relate itself to the curved outline striations that mark the saucer's base and kill the reflected light from below—a wonderful composition by an artist with a profound knowledge of the laws of sciography. Note the enormous projection of the slice upon the saucer. At the corners it overhangs the centre of the flute base below some twenty inches, and has a plan size along the diagonal of over eight feet, compared with the column's upper diameter of five. Note also that the actual edges of the cast shadow will always take a lobed form determined by the flutings, and that the whole composition is pleasing in itself and as a related unit of the design. Having now arrived at the upper limit of the biggest shadows within the composition, and between the caps of the columns, we note that these are appropriately separated from those remaining by the broad, unbroken architrave, upon which normal shadows do not fall. We use the word "normal" advisedly, for it is evident that in considering daylight shadows some angle between meridian and horizon must be assumed. It is probable that in all ages considerations of shadow values would be taken at some approximation to an average angle, usually assumed to be given when the angular magnitude of the disc is forty-five degrees. It is interesting to note that the magnitude may be sixty-seven and a-half degrees with the horizon in the best Greek work without loss of interest, while lower magnitudes are always interesting, and higher ones never yield either well-defined or awkward edges. At least, in as far as the edge value of architectonic shadows is concerned, this was principally obtained in the Greek Doric entablature by the use of guttæ (as the small drop ornaments are called) that enriched the main shadow edge of the cornice soffit, and that of the plain band marking the position of the triglyph blocks occurring in the frieze. Please note that these increase in frequency upwards, and I think we cannot doubt that their value and origin was due to considerations of shadow. Those on the base of the mutule blocks of the cornice are inclined upwards and backwards towards the building, from considerations of reflected light, and all are designed to break the straight lines of shadow that would otherwise result if only straight lined mouldings were used. The picturesque and shadow value of the entablature was also enhanced by sculptured groups in low relief in the metopes or square panels between the triglyph blocks and by the sculpture of the pediment, which was in high relief. Defects in the sciographic scheme were also remedied by colour, and colour was applied throughout to add interest to the ensemble, to deepen shadows, to kill light reflections, and to reinforce and, where necessary, disguise the forms and their images in shadow. I cannot deal fully with this debatable aspect, because it is a painter's job, and there are painters here, but I cannot forbear, in conclusion, a little analysis of the effect of the pure architectonic shadow, as it fell from the Doric cornice upon the surface of the frieze, since it indicates that proper union of the arts of architecture, painting, and sculpture without which we are, I am sure, all agreed that perfect building is impossible. Our columns, as you will have gathered, were about fourteen feet apart (centre to centre). Over each column, and between each, were triglyph blocks, about three feet wide and four feet high and between these two sculptured panels about four square. A three-feet shadow ledge of the cornice lay over all, which ledge projected at less than a right angle, so as to assist the elimination of reflections. The edge of the shadow was defined by lobe-like serrations. The triglyph blocks had V-shaped grooves, which gave a vertical striation in opposition to the curves of the figure subjects in the panels and the requisite relief. The curved edges of the lobes, when they fell into V-shaped grooves, were bound to look awkward, so the painter rendered them a deep red. The sculptor corrected the straight-lined effect of the triglyphs by opposing curves of great strength, as, for instance, the lapith wrestling with the centaur, the latter gives a strong line from throat to hind quarters, while the lapith over-shadowing, gives the strong curve of straining back and forward, shooting right leg firmly planted, and next the spectator. The sculptor thus assisted the architect, and then the painter came along and helped them both by tinting in the background of the panel. All the chief artists we read about served an apprenticeship of fourteen years to chisel or brush before they touched the sacred shrine round which our thoughts have been centred to-night. Is it any wonder, then, that when the sun rose over the horizon and pierced the centre of the colonnade, lighting up the be-jewelled image of Athena, the worshippers fell upon their faces and worshipped?

THE COMMITTEE ON WAR DAMAGE.

A meeting of the Executive Committee was held in the hall of the Brewers' Guild, E.C., on Wednesday, August 21, the president, Sir Forster Todd, Lord Mayor of York, in the chair. The letter of July 23 from Mr. Bonar Law, in which he replied to the request that he would receive a deputation from the committee, was further considered. Mr. Bonar Law had written to the effect that the scheme introduced by the War Cabinet on November 5 last was, "in the opinion of the Government, the most satisfactory solution of the question that could be found, and nothing has happened which would justify any other view. In these circumstances I do not think that a deputation would be of assistance."

On the motion of Mr. Mark H. Judge, chairman of the Executive Committee, seconded by Deputy Sir Robert H. Rogers, the following resolution was passed unanimously:—

"That whereas the corporate bodies forming the Committee on War Damage include 842 municipal authorities having a population exceeding 32 millions, we are of opinion that the Chancellor of the Exchequer cannot have given due weight to the representative character of the committee when he said in his letter of the 23rd ult.: "I do not think that a deputation would be of assistance." In any case, we hereby renew our application to be received by Mr. Bonar Law, feeling assured that a conference between the Chancellor of the Exchequer and the committee is eminently desirable in the public interest, seeing that it is of the utmost importance that the question at issue shall be so settled as to prevent it being a bone of contention at the next general election. In support of our request, we submit the following:—

"The Committee on War Damage are contending for the principle that all citizens injured in person or estate by air raids or bombardment should be entitled to compensation from national funds. The Prime Minister expressed full agreement with this when he received the committee on July 13, 1917, but, as yet, it has only been given effect to in a very limited degree. The concessions made since the constitution of the committee are:—1. A reduction of 50 per cent. on the premiums for insurance; 2, compensation by way of grace for personal injury in certain cases; and 3 (since July 13, 1917), compensation for damage to property in certain cases up to £500, but only for damage subsequent to August, 1917, that is after three years of the war. These concessions in no way meet the case, and while we welcome them as some recognition of national responsibility, they are so unsatisfactory that the question cannot be allowed to remain where it is. There is no principle in a scheme which fixes upon an arbitrary sum in hundreds, when the damage is measured by thousands, and leaves out of account all damage exceeding that amount, especially when damage inflicted prior to September, 1917, is entirely ruled out, and we therefore feel that we are entitled to ask the Chancellor of the Exchequer to reconsider with our deputation the principle of full national responsibility as set out in our memorial, viz.:—

"That the Government scheme for insuring against loss or damage by aircraft or bombardment, which has made individual citizens responsible for war damage inflicted on them by the enemy, is manifestly unjust. That it operates unfairly because it throws upon certain sections of the community burdens and responsibilities which should be shared by all.

"That the Riot (Damage) Act, 1886, which provides that, in the case of damage by riot,

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compensation is to be paid to the sufferers out of the police rate of the district, recognises the just claims of the individual; and it would appear that persons who suffer direct damage to their property by the action of an enemy country during war have a still stronger moral claim to compensation, such compensation to be a charge upon the taxes which have been paid by them primarily for the purpose of protection against foreign enemies.

"That the loss of life or personal injury due to enemy air raids or bombardment should, as a matter of course, be duly recognised by the Government as involving such compensation as it is possible to make from national funds."

It was unanimously resolved to adjourn the question of arrangements for the next meeting of the General Committee.

Correspondence.

FOULING OF FOOTWAYS BY DOGS: AN APPEAL TO DOG OWNERS.

To the Editor of THE BUILDING NEWS.

Sir,—As the officer responsible for getting out the notices on "Fouling of Footways by Dogs," to which you refer on p. 119 of your issue of August 21, I send a copy herewith.

As I stated in *Municipal Engineering* last week, I have never, as a matter of fact, issued a notice or leaflet which attracted so much attention. By issuing it I appear to have satisfied quite a considerable proportion of the many persons who have complained so bitterly of the nuisance caused by dogs, and who have cried out for something to be done. Many of these individuals have written to me thanking me for getting the notice out, and asking me for copies. Several medical officers of health have written to me about it, and have flattered me by requesting permission to copy it. Many humorists have either called to make or have written amusing comments. The commonest joke has been, of course, that the notice has been read to the dog of the humorist or to the dog of the person next door. One of the best was of a lady leading a dog to which, as she interfered with it when it appeared to be about to disregard the appeal, she addressed these words:—"Come out of that, you dirty little devil! Haven't I just read the doctor's notice to you?"

Despite these jokes, however, I may say that the notice was seriously intended. There is no doubt that the dog nuisance has been much worse during the last year or two, possibly because more dogs have been allowed to run loose; possibly because footways have, perforce, been less well scavenged. I believe that dogs can be trained to seek the roadway. I am acquainted with dogs that have been so trained. I believe, too, that the appeal is having an effect. Complaints certainly are fewer in number, and I have now ready an effective reply to any that do reach me. I may add that I have had definite instructions from my Public Health Committee to arrange for the maintenance and renewal of the posters as required.—Yours faithfully,

CHARLES PORTER,
Medical Officer of Health.
Metropolitan Borough of St. Marylebone,
Public Health Department,
24, Somerset Street, Portman Square, W.

Metropolitan Borough of St. Marylebone.

FOULING of FOOTWAYS by DOGS.

Nuisance and danger to health are caused by the excreta of dogs.

You can train Your Dog to use the Roadway. In the Interests of the Public Health, Please Try.

CHARLES PORTER,
Medical Officer of Health.
Public Health Department,
24, Somerset Street,
Portman Square, W.1.
July 10th, 1918.

A new town hall is amongst the suggestions for Islington's war memorial.

THE FUTURE OF ARCHITECTURE AND THE ARCHITECTURAL PROFESSION.

On the motion of the hon. secretary of the Institute the council recently appointed a committee "to consider the whole relation of architecture to architects, to the institute and kindred societies, to the public and to each other, with power to take evidence, and to frame a report on the evidence and opinions collected, together with a complete scheme of reconstruction for consideration."

The committee consists of the president, the hon. secretary, Sir Aston Webb, R.A., Mr. Reginald Blomfield, R.A., Mr. Walter Cave, Mr. H. M. Fletcher (president of the Architectural Association), Mr. W. Alex. Harvey (president of the Birmingham Association), Mr. H. V. Lanchester, Professor W. R. Lethaby, Mr. S. Perkins Pick (president of the Leicester Society), Mr. John W. Simpson, Mr. Paul Waterhouse, Mr. H. H. Wigglesworth, and Mr. Herbert Shepherd. The president is chairman of the committee, and Mr. Wigglesworth hon. secretary.

Among questions put to those giving evidence are the following:—

What is the cause of the unsatisfactory state of the profession, and what remedial measures are necessary?

What are the minimum essential acquirements for ordinary general practice, and how should architectural education be modified to secure these?

What are your views as to the neorganisation of the R.I.B.A., and what direction should this take?

Should an attempt be made to unify the profession, and, if so, in what manner and to what extent?

How may the unqualified practitioner be prevented from bringing the profession into disrepute?

How far should technical special knowledge be acquired by architects, and how should education be improved to secure this?

How far should architects be encouraged to specialise?

COMPETITIONS.

HOUSING AFTER THE WAR: SCOTTISH ARCHITECTURAL COMPETITION.—The Treasury have now conveyed to the Local Government Board for Scotland their approval of the conditions governing the architectural competition about to be promoted by the Institute of Scottish Architects under the authority of the Board. The competition is open to any British subject, and is divided into three sections. The first two sections are for lay-out plans accompanied by designs of (1) two-storey cottages and flats, and (2) tenements restricted to three storeys. The third section is for the design of cottages for rural areas without a lay-out plan. The accommodation to be provided in the various types of houses comprised in all three sections varies from a living room, scullery, and two bedrooms, to a living room, scullery, parlour, and three bedroms. Intending competitors in Sections 1 and 2 will be duly furnished with plans of selected sites (upon which their schemes have to be based). Premiums to the total value of £725 will be awarded by the Committee of Selection for the most meritorious designs. As the result of the competition, a panel of architects whose designs are approved by the Committee of Selection will be formed, and a list of the names on the panel will be furnished to local authorities preparing post-war housing schemes, with a recommendation from the Board that architects on the panel should be appointed to advise in carrying out such schemes. The conditions of competition—which will be issued *in extenso* at an early date—reflect concisely the official mind as to the nature of after-the-war houses, and we commend their perusal not only by all architects but also by all those concerned in this burning question. In due course public notice will be given as to where copies of the conditions are obtainable.

THE BOLTON SCHOOL.—NEW PUBLIC SCHOOL BUILDINGS.—Owing to national conditions, some of the competitors are finding a difficulty in completing their drawings, and have asked for further extension of time for sending in the designs. The Trustees and Lord Leverhulme, being desirous of meeting the convenience of competitors in every way, have agreed that designs shall be received up to and including November 30, 1918, in place of September 28. Clause 19 of the conditions of competition states, "Drawings to be made on white paper of equal size." It is desirable that this condition should be observed, but competitors may use their discretion in the matter if difficulty occurs. Messrs. John Bradshaw Gass and Arthur John Hope are the assessors.

PROFESSIONAL AND TRADE SOCIETIES.

ARCHITECTURAL ATELIER, THE UNIVERSITY OF MELBOURNE.—It is proposed by the University of Melbourne to establish immediately an architectural atelier, to be founded with the objects and to be governed by the regulations set out in the university statement printed below. It is proposed to erect a new building in the university grounds to accommodate the students of the atelier. The estimated cost of the building and equipment of the atelier is £500, and the R.V.I.A. has agreed to guarantee the university 5 per cent. interest on the amount for a period of ten years. The Institute's quota of the students' subscription is to be reckoned as £3 3s. per head per annum, so the Institute will only require to make good any shortage to the maximum of £25 per annum. The opening of the new atelier should mark a distinct progression in the development of the education of the architectural students of this State, and form a stepping stone to the foundation of the much desired chair of architecture, which it is hoped will ere long be established at the Melbourne University. The chairman is Mr. Arthur Peck, president R.V.I.A. Members.—University representatives—Rodney H. Alsop, F.R.I.B.A., F.R.V.I.A., acting lecturer in architecture; Anketell M. Henderson, M.C.E., F.R.V.I.A., hon. lecturer in architecture; Henry Payne, M.Inst.C.E., professor of engineering. Royal Victorian Institute of Architects' representatives—Arthur Peck, president R.V.I.A.; Edward A. Bates, F.R.V.I.A. Director of Studies.—Rodney H. Alsop. The object of this atelier is to promote the study of the principles of design, which aim at the development of architecture. It is conducted as far as possible on similar lines to those in Paris and elsewhere, and enables its members to acquire a like training in the art of architectural composition. Being an atelier and not a class, it is always open, and its internal control is regulated by the committee, consisting of three representatives of the university and two of the Council of the Royal Victorian Institute of Architects. The director of studies attends at stated intervals, and definite times are fixed for working together, and for the exhibitions and criticisms.

CAMBRIAN ARCHÆOLOGICAL SOCIETY.—The seventy-second annual meeting of the Cambrian Archæological Association was held at Shrewsbury last Friday. Dr. Boyd Dawkins presided. The General Committee, in their report, stated that the roll of names submitted for membership was very gratifying, showing that there was no diminution in the appreciation and interest taken in the work of the association, in spite of the present unfavourable conditions. The treasurer's report showed that the accounts compared very favourably with those for the previous year. Dr. Boyd Dawkins was re-elected president, Canon Fisher and Mr. A. E. Bowen secretaries, and Mr. D. Lleufer Thomas treasurer.

The death took place last Saturday week, after brief illness, of Mr. Edwin James Head, builder, Martock, at the age of sixty-eight.

Miss Mary Riley, of Northwood, Middlesex, spinster, has left £500 to the Vicar of Hapton, Lancs, towards building a new church, for a memorial window in the chancel, and for a pulpit to the memory of the men of Hapton fallen in the war (net personalty, £29,844).

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Our Office Table.

The reports for the year 1917 of the Science Museum, on the Geological Survey and the Museum of Practical Geology, are issued as a Parliamentary Paper (Cd. 9131), price 1d. The closure of the Science Museum during 1917 reduced the pre-war average of visitors daily from about 1,000 to 150, which is doubtless gratifying to the authorities! No vacancies in the staff have been filled since 1917. Twenty-nine members have been set free for naval and military service, six have been lent to other departments, and a number of others, while remaining at the museum, "have been engaged on work in connection with the production of munitions." A number of gifts and loans are recorded. The field work of the other departments seems to have chiefly embraced borings in search of coal and oil-bearing shales, the revision of a part of the central coalfield, and the collection of information bearing on the construction of a Mid-Scotland Ship Canal.

The annual report of the Whitechapel Art Gallery shows that the income for 1917 amounted to £1,203 16s. 8d., and in spite of deficits of £92 6s. 5d. on the War Photographs Exhibition and £194 13s. 6d. on the War Drawings Exhibition there was an excess of income over expenditure of £386. The balance-sheet shows a credit balance of £1,321 15s. 10d. at December 31. Lord Burnham, chairman of the trustees, in an introduction, states that the Canon Barnett Memorial is nearing completion. The original designs for the mural paintings in the entrance hall of the gallery are the work of Lieutenant H. F. Garrett, who was killed in the Dardanelles in 1915, and these designs, so far as they were finished, have been adhered to as closely as possible. The trustees decided to entrust to Miss Elsie McNaught the task of completing the paintings from the unfinished designs left by Mr. Garrett.

A plea for the utilisation of the water-power of the British Isles was urged in a paper by Mr. A. Newlands, engineer-in-chief of the Highland Railway, read in his absence at King's College on August 22. He pointed out that at present only 8.8 per cent of our water-power was used, equalling 1.6 per cent. of the total mechanical power of the country, whereas there was enough power unused to bring the proportion up to 10 per cent. This would result in a saving of seven million tons of coal a year and provide employment for at least two million workers. Water-power would be of great value in country districts, where industrial energy could be recreated, or where it had never existed, and the economic redemption of Ireland might be within reach if her water-power were used.

At the West Sussex Appeal Tribunal held at Worthing consideration was given to the case of the Worthing building inspector and general assistant to the borough surveyor, thirty-eight, married, Grade 2. "I submit," said the National Military Representative, "there should be some kind of finality now. He has been exempted for two and a-half years, and I think the time has come when this man should serve," he added. Mr. F. Roberts, borough surveyor, appeared and stated there were seven assistants in the office before the war, and applicant was the only pre-war man left. Mr. Roberts said he must have a man who had local knowledge of the town, sea defences, etc. His work comprised office routine, to answer technical questions, and a considerable amount of outdoor work, surveying, etc. "Any women in the office?" queried Major Grantham. "No," replied the borough surveyor, "it isn't nice; women cannot discuss drains, etc." Major Grantham said women were doing work in engineers' offices in some parts of England, but Mr. Roberts said there were no lady engineers or surveyor. Three months' further exemption was granted.

The note of the discovery of the Roman brick at Musselburgh, to which we gave publicity on p. 136 last week, has induced Mr. W. Sime to say in the *Scotsman* that the Border churches round about Newstead Roman settlement surely owe their thick walls and "Norman" square-shaped stones to that place for a quarry, and may be also pre-Margaretan with heavy stone roofs? It is usual to talk of these fabrics as from the date of their dedication in the twelfth century. The cost of so many churches may be presumed to be prohibitive had not such a quarry been ready at hand. The natives continued the practice of building from ready-made stones from Dryburgh, Melrose, Jedburgh, etc., down to the early-middle part of last century.

Mr. A. W. Shelton, F.A.I., who was appointed by the late Lord Rhondda a member of the Local Government Board Housing Advisory Committee, was the guest of the Aldwych Club last week. He said that the present dearth of working-class dwellings was roundly 450,000, and was growing at the rate of 75,000 each year. Probably, therefore, when peace came, fully 500,000 new houses would be needed, quite apart from the normal growth of requirements. Provision for at least 1,000,000 new cottages should be made and carried out within five years of peace. He had reason to believe that a scheme recently submitted to and now under the consideration of the President of the Local Government Board is in effect a partnership between the State, the local authority, the building society, and the tenant. It provides for the building of houses by private enterprise at a price which would give the builder a living profit.

The *Annali d'Ingegneria e d'Architettura*, for June 16, states that a strong committee of business men has been formed to consider the possibility of constructing, after the war, a canal connecting Milan with Lake Como, and joining the waterway which it is proposed to make from Milan to Venice, thus opening up the rich plains of Lombardy to cheap means of transit. The works would comprise a canal from Milan to Vimercate, a big tunnel from Vimercate to the River Adda, and the canalisation of the Adda from Paderno to Lecco. The scheme has the approval of the city of Milan, and will be supported by the Edison Company, which is the chief user of the waters of the Adda. The distance by water from Milan to Lake Como would be reduced by about eleven miles.

A cement foundation for wooden poles is often useful in strengthening poles decayed at their base, in making firmer poles set in unsuitable soil, and increasing the life of poles. There is danger of moisture running down the pole and soaking in between the pole and the cement. It is suggested that a waterproof bond may be obtained by forming a groove in the top of the cement, where the pole enters, and filling this groove with hot tar. The depth of groove may be 1 inch, and the joint or seal should be re-poured from time to time to allow for loosening and for cracks in the pole, and so forth.

Returning to the scheme as it is being worked in Great Britain, *Timber* finds that one of the chief grievances of merchants is the deduction of the May 31 stocks from the ration. On principle, this seems fair enough. Every firm should start with a blank sheet on a certain date. No merchant should be assumed to have any stock, but in order to avoid unnecessary transport, if he had any in his yard he should keep it against his ration. But it will easily be seen in what an unfavourable position some firms are thereby placed. If a man has, say, 200 standards, even of a mixed specification, he can have no very wide range of sizes and qualities; but a merchant with a ration of 200 standards is entitled to draw any sizes or specification his consumer wants from the whole of the national stock, i.e., he has a chance of 200 standards out of about 200,000, and can therefore supply any permit that may be presented. And, still further, the ration-holder is not tied down to locality, but can, if he wishes, accept a permit from any part of the country, from one end of England to the other. Many a merchant would be glad enough to exchange his stock for a ration of a similar quantity, even although he may be at liberty to sell the former at the old prices, which are higher than the flat rates now ruling.

The *Zentralblatt der Bauverwaltung* (June 19, 1918) records a notable failure of a reinforced concrete roof of the ordinary ridge type upon a workshop 24.7 ft. wide between the external walls. There were three principals, each 58 cm. by 30 cm. (23 ins. deep by 12 ins. wide in cross section) and fixed at 17.5 ft. centres. These carried a hollow reinforced concrete roof 3.15 ins. thick, rendered on the outer face with concrete 2 ins. thick, making a total thickness of 5.15 ins. The principals rested 10.2 ins. at each end upon the side walls, which were 15 ins. thick, and corbelled out 2.36 ins. on the external side below the principals, thus making the upper part of the walls 17.4 ins. thick. The design of the structure and the stresses calculated on the various parts had all been approved by the proper authorities. The concrete work was done between May 10 and 21, and in accordance with the Government regulations the centering should not have been removed until June 11, thus allowing three weeks for setting, and the temporary struts should not have been removed until June 25. Both centering and struts were, however, removed by June 7, and within half an hour the roof began to collapse and became a total loss, as it had not set properly.

At the Swiss Labour Exhibition in Zurich a building was shown designed by the architect Alfred Altherr, director of the Zurich Art Work School, of rectangular shape, with an inner quadrangle. The rooms in which the exhibits are shown are all grouped round the central court, and approached from a covered gangway. The object of the exhibition is to show the most modern designs of working-class dwellings and single-family houses of a slightly better class, and the exhibits are described in detail, the underlying idea being that to obtain and retain labour of satisfactory quality it is essential to pay special attention to the comfort and well-being of the persons employed.

From Heidelberg it is reported that the Kaiser monument has been removed from the Ludswig-Platz and will be melted down, and that the Metz monument will follow. The same thing will shortly happen in other German towns. At Reichenbach, for instance, orders have been issued for the melting down of the Kaiser-Wilhelm monument, and also those to King Albert and Prince Bismarck, which together contain 3,200 kg. of metal. The whole of the monuments are to be grouped in three classes, according to their artistic merit. Those in Class 1 are to be melted down first, those in Class 2 next, and those in Class 3 are to be preserved. The author (in the *Deutsche Bauzeitung*) deplores the fact that the monuments must follow the church bells, but consoles himself with the thought that monuments of superior artistic merit to those now to be melted down will fill their places after the war is over.

Mr. R. H. Christie, solicitor, and secretary of the Society of Scottish Artists for a quarter of a century has died in Mid Lothian.

Mr. William David Morgan, M.S.A., of Pentre, Rhondda Valley, has lost his son by drowning at Porthcawl, where the family were visiting.

Training in cabinet-making, wood working, and upholstery is to be given at Wycombe for six months to disabled soldiers and sailors, who are afterwards to be transferred into the factories. They will be adequately paid during training.

Mr. W. E. Orchard, borough surveyor of Pembroke, who is single and Grade 2, has received a calling-up notice, but, owing to certain steps which have been taken, this has been temporarily suspended. The town council have adjourned meanwhile the question of appointing a temporary borough surveyor.

The ninety-second exhibition of the Royal Scottish Academy which closed last Saturday evening has been the most successful since the outbreak of the war, both as regards attendance of visitors and sales of works of art effected. In the former, it is well up to the average of recent pre-war exhibitions, whilst the number and value of works disposed of have not been equalled for a considerable number of years. The total number of works sold was 115.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

Chapel of the Order of the Thistle, St. Giles' Cathedral, Edinburgh. The side stalls Sir Robert Lorimer, A.R.S.A., F.R.I.B.A., Architect

House at Oxford. Captain A. F. Wickenden, R.A.F., Architect. View and plan.

An Old Ruined Barn, Union Road, Dover. Measured and drawn by Mr. Allen T. Hussell, Architect.

Local Government Board for Scotland. Houses for the working classes after the war. Various types of cottage dwellings issued by the Board. Plans and elevations.

Currente Calamo.

We have received from the "Ministry of Reconstruction" the first two pamphlets it is issuing. The first deals with its "Aims," and the second with "Housing in England." They are to be followed by others, and will be obtainable at the price of twopence each at any of the Government stationery offices, or through any bookseller. The first pamphlet deals with the "main problems of reconstruction, and the way in which they are being approached by the Ministry." That "way," we venture to say, is not a way that the Democracy yet understands, or about which it has been consulted. We are told "that the idea of Reconstruction," of a simple return to pre-war conditions, has gradually been supplanted by the larger and worthier ideal of a better world after the war. We are told that the Government and Parliament has chosen the word Reconstruction in preference to the more colourless terms adopted elsewhere, in Germany for instance, "where the parallel organisation was given the name of the Department of Transition Economy." Our opinion is that for once the Germans are right, and that we had better set ourselves the same task. The Government here has no mandate from the country to pursue ideals, or to waste money and paper in their propaganda. Every one of the new "Ministries" has been a failure, more or less, so far, and the nation generally is sick of them. But it will be saddled permanently with "The Ministry of Reconstruction," which will be developed into an amalgamation of all the waste and worry inflicted by our present irresponsible masters unless it makes it pretty plain presently that it is sick of it all. Let us not be mistaken. Some of the ideals stated are worthy of the name. But they are to be achieved only by the methods taught by experience, and not by the *ipse dixit* of a self-constituted body unknown to the Constitution, and the inheritor of all the ghastly mistakes and the huge burden of debt its predecessors have saddled us with.

The pamphlet on Housing is a rather wishy-washy *réchauffé* of all that Mr. Hayes Fisher has been favouring us with for months past; which, while prominently quoting the "definite" statement that it "may be advisable" after all to offer assistance to private enterprise, also significantly enough adds that "no definite statement can yet be made as to the form of assistance which could be given, or what conditions would have to be imposed." There is, of course, no repetition of the dictum of the President of the Local Government Board "that the day of the private builder is over." But that this is the intention is evident enough from the way in which all through the war the builder has been the victim and scapegoat of every Ministry and Department. If the Government has made up its mind to signalise the housing of the people by another huge welter of waste and corruption, there is no hope for anything better, we suppose. But it is up to us of the architectural profession and the building trades to be busy now and up to the time of the General Election in making it plain that the extinguishing of all individual enterprise, which has nearly brought us all to bankruptcy and rendered so many of our people homeless, is a fair sample of the "Reconstruction" it is intended to apply presently to every branch of industry and to every condition of life and occupation. When our votes are asked for presently, let no man have them, whatever his professed politics, who will not pledge himself to oppose to the uttermost the most sinister and self-seeking attempt ever made in England to bind every one of us to a Procrustean bed of torture while our limbs and energies are trimmed down to impotence and our pockets emptied to furnish the salaries of gangs of self-chosen taskmasters.

The letter we publish elsewhere from the British Federation of Iron, Steel, Tin Plate, and Metal Merchants only voices similar complaints that reach us every week. It is evident to all but the officials who are being almost daily added by this Government to the non-producing section of the community that individual enterprise will soon be a thing of the past, and that the alien will, in a still greater measure than the past, snatch from us our world-wide trade and ruin those who have built it up. Under such circumstances the restoration of our national financial position will be impossible. That will matter little to the Government placemen, who will continue to draw their salaries and commandeer our buildings, sustained by the four-hundred-pounders in Parliament, who will edge on their friends and relatives into the snuggest berths with the biggest wages as long as the voters are content to let things slide. The one remedy is, as we suggested last week, a general public strike against bureaucracy and the profiteering it encourages. If some such blow is not delivered and quickly, the endurance of the nation will snap suddenly, and we shall drift into anarchy of the sort that has been provoked in Russia by centuries of similar officialism, from which workman and master will seek refuge by emigration *en masse* to America, where the organisations of manufacturers to which our bureaucrats point as models were *not* imposed by the State, but, on the contrary, were the outcome of the uncontrolled energy and enterprise of the commercial community, which, wisely recognising, the American Government made the fullest use of and fostered with liberal wisdom.

Our heavy death duties have done good work in many democratic directions. Besides adding greatly to the needs of revenue, they have operated to cut up large landed properties. We are still a long way from peasant proprietorship, but every step taken in the division of huge estates is really towards that goal. All changes in the distribution of the land from the autocratic few amongst the democratic many must be to the advantage of builders and the building trades. The recent case of "The Earl of Ellesmere v. The Commissioners of Inland Revenue," though outwardly technical and financial, is, when looked into, seen to be favourable to the wider ownership of land. The facts here showed that the former Earl had died in July, 1914. The present petitioner appealed against the Commissioners' valuation, supported by the Referee, of certain lands, farms, and timber which came to him by inheritance. This valuation, made in April, 1917, came out at £77,000. The Earl had, upon expert advice, and after full advertisement, sold these properties in one lot for £68,000. He now argued that, if he was charged upon the higher figure, he would be paying for more than he obtained. It was shown that the purchaser had sold again in separate portions at a good profit. The legal point turned upon the meaning of the words "principal

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value," as used in the Finance Acts, 1894 and 1910. It was urged that the Earl was not bound to sell in separate lots. But against this Mr. Justice Sankey held that the "principal value" meant the best market price obtainable, which was not conclusively proved by a sale in one lot. It was a question of fact for the Referee, who had ruled against the Earl. The lands, farms, and timber were scattered and miscellaneous, and, as the result proved, would have fetched more if sold separately. So the Earl's appeal was dismissed with costs; the Commissioners' valuation taken as the "principal value," upon which Estate Duty must be paid; and a practical precedent created in favour of splitting up large landed properties.

The *Board of Trade Journal* says it has been represented to the Controller of Timber Supplies that merchants to whom rations from the national stock have been allocated are in some cases refusing to accept orders from consumers, with a view to distributing their allotment among their various customers, or otherwise holding it back from purchase by persons holding permits. This course is strongly to be deprecated. The Controller, we are told, "wishes" to point out that merchants are now acting in effect as distributors of the national stock, and that failure to supply holders of permits, where unsold rations are available, can only result in injury to the national interests, as well as to those of the timber trade. Refusal to sell to a permit-holder on the part of a merchant able to supply would afford ground for the withdrawal of the merchant's ration. In the event of undue delay by the trade in the supply of timber to a customer holding a permit, the Controller "might" find it necessary to supply direct from the national stock. Why doesn't he do it at once instead of allowing the "deprecated" injustice to continue?

Of all the London estates there is, it is stated by Mr. John Slater, the surveyor thereto, in a short history he has just published, no other which can compete with the Berners estate as regards antiquity of record. The estate was purchased by Josias Berners in 1654, but the documents in the owner's possession enable its history to be traced back to 1546, "when it formed part of the old Leper Hospital of St. Giles, which probably acquired it by private bequest or gift in the reign of Edward I." (1272-1307), so that the history of the estate, so far as it can be said to have any history in those early days, may be said to be known from the end of the thirteenth century. After the dissolution of the hospital, the ground now forming the estate was granted by Henry VIII. to John Dudley, afterwards the Duke of Northumberland, who was beheaded for his attempt to put Lady Jane Grey on the throne. He sold it to Wymond Carew in 1596, and the deed of sale, with all the subsequent deeds effecting transfers of the property, is now in the keeping of the office of the estate. An interesting description is given by Mr. Slater of the surroundings of the property when it was bought by Josias Berners in 1654. It was then a country farm, with fields running down to what was then Tyburn Road, and is now Oxford Street, a country road with no houses upon it except a few taverns, the resort of footpads and other bad characters. The estate itself, whatever alterations it has undergone, covers the same area in 1918 that it covered in 1654. Its Oxford Street frontage, about 320 yards, extends from Wells Street to Perry's Place, and the property runs back to the Middlesex Hospital. It also comprises a long strip along the southern side of Cleveland Street. The modern development of the estate was started about 1750, when the existing streets were laid out, Berners Street itself dating from 1763. At the end of the eighteenth century and the beginning of the nineteenth it was a fashionable residential district, where many well-known persons lived. Some of these are mentioned by Mr. Slater, we are reminded by the *Journal of the Royal Society of Arts*, and to those whose names he records may be added, on the authority of the late Mr. H. B. Wheatley, some other well-known Berners Street residents. Opie, the celebrated artist, and J. Lonsdale, the portrait painter, both lived at No. 8; Sir Robert Smirke, R.A., the architect, No. 13; Henry Bone, R.A., painter in enamel, No. 15, where he died in 1834; Dr. Robert Gooch, the well-known physician, No. 19; W. Shield, the composer, No. 16; James Bartleman, bass singer, No. 45; and Richard Warrington, actor, No. 29. It may also be mentioned that Sir Thomas Chambers himself built his house, No. 53, and that it was for many years the home of the Medical and Chirurgical Society. James Barry, it may be added, not only lived in Castle Street, but died there.

A tentative programme has been drawn up by the special committee of the Montreal Builders' Exchange appointed to make arrangements for the proposed conference of building and construction interests at Ottawa. The object is to study the best means by which the building and construction interests of Canada can further the general readjustment which is necessary both for the balance of the war period and for the reconstruction after the war. All builders, including contracting engineers, general contractors, sub or trade contractors, and dealers in building supplies, are eligible, whether appointed delegates of organisations or representing individual firms or companies. The committee are desirous that all those who intend to be present should notify the secretary by September 15. The tentative programme, which has been forwarded to the various exchanges for approval or suggestion—includes the discussion of the future usefulness of builders' exchanges, also estimating; quantity surveying and cost plus fixed sum; tenders—method of calling and opening bid bond and cheques and contract bonds; contracts—standard agreements, unit prices, etc.; labour—labour and trade parliaments; employees' apprenticeship and technical education. Future business: Materials Committee—resources, economy, adjustment, consideration; future business—industrial housing, concrete roads, etc., contract farming. Business Relations: Public works, architects, engineers and owners; sub-contractors and supply houses; powers of superintendent or inspector and arbitration; foreign competition and plan making. Building by-laws and lien laws committee.

CONCRETE AND THE HOUSING PROBLEM.

The Committee of the American Concrete Institute have published a useful Report on Industrial Concrete Houses, which is supplemented by some practical papers, three of which we give elsewhere.* Report and papers alike are characterised by a clearness of definition and general grasp of the subject, not so general this side as might be desired, where on a rule more time and space is wasted in debating on the real or supposed merits of rival systems, some of which are already back numbers, than in discussing fairly and squarely the principles of concrete building and the best means of avoiding its disadvantages.

The expression "concrete house" is a rather indefinite term conveying different minds. In order to make this report clear the committee defined the concrete house as a house having external walls of monolithic concrete, precast concrete or concrete blocks. A house which also has internal partitions and floors and roof of concrete we describe as an "all-concrete house." A frame building covered with stucco or granite is not considered to fall within the definition "concrete house," and is defined as a "cement-covered house."

The Committee found that there exists in the minds of the layman an impression that concrete is damp and unhealthy. It is most unfortunate that concrete should have such a reputation, even though some earlier houses justify this criticism. While a concrete wall may be perfectly waterproof it is subject to condensation on a wet day unless the walls are furred and plastered so as to get an air space insulation: this condensation is sure to be apparent. In some houses this has proved to be a very objectionable feature; in other houses the tenants complain that on the family wash-day the walls were very wet, and on other days they were uncomfortable. Climate has a good deal to do with this.

The investigations of the committee have not shown that a concrete house can be built more cheaply than a wooden frame house. The relative cost, of course, varies in different localities, according to the availability of different types of material, but, speaking generally, we find that the cost of a concrete house should run from 10 to 15 per cent. more than the cost of a well-constructed frame house. The advocates of the concrete house must rely upon the superior merits of concrete as a material and not upon its low first costs. Three principal types of concrete house costruction are the concrete block, the precast house and the monolithic house. The general conclusions of the

* Pressure of matter at time of going to press compels us to hold over the third paper, "Interior Construction of the Concrete House," till next week.

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committee as to the merits of the various methods are that for small jobs the concrete block house stuccoed on the outside is the best solution, but for large developments in which more than fifty or sixty houses are required the monolithic or precast types show an economy in cost and speed that should place them in the foreground.

In any type of concrete house construction difficulties are sure to be met with. Some of these are discouraging to the contractor entering this field and are likely to hinder its expansion unless faced and overcome. The committee discussed them frankly in order to guard the novice against disappointment and failure, realising that these difficulties are incidental only and not insuperable. The successful work done is sufficient answer to any objection raised that concrete house construction is too difficult or impossible.

The precast house, composed as it is of shop-made units of considerable size and weight, needs a large outlay on equipment for hoisting, erection, and transportation of the units. This limits the use of this method to groups of houses which are large enough to amortise this outlay in a reasonable time. Great care also is needed in setting to prevent breakage—as a broken unit not only involves loss of spoiled material but considerable delay while fresh units are made. In order for a precast system to show economy the design of the houses must be alike in plan and uniform in design.

The committee agreed that wood forms are out of the question for monolithic house construction. Although the first cost is low, the life is short, the upkeep high, and the results obtained are generally unsatisfactory. In any kind of concrete construction the concrete wall is more difficult to form than the floor, the foundations or other parts of the building, and it is therefore necessary to discard the wood form and search for something better if monolithic concrete houses are to be built successfully.

There are about a dozen metal wall forms for house construction on the American market. One of these is made of structural steel channels—the rest of sheet metal. With certain forms a complete storey can be poured at one time, but the greater number are designed to allow the pouring of one course (usually 2 ft.) at a time. The structural steel form has the demerit of being exceedingly heavy, but on the other hand is easily set up true to line and giving a very good wall surface. The sheet metal form is not so easily kept true, and is easily distorted and damaged, but with proper care can be used to produce excellent results.

The committee has not come to any conclusion as to how much of the house should be built of concrete. It is certain that the concrete wall offers great advantages, due to its fireproof, weatherproof, and permanent qualities. It should be furred inside. It should cost about the same as a brick wall, or slightly less. A concrete floor should cost about 18 cents per square foot more than a wood floor. Concrete with wood top surface about 30 cents per square foot more.

A granolithic floor is advocated by some on account of the ease of cleaning, but for poor families who cannot afford many rugs it is unsuitable, and it is unhealthy for small children to play on a cement floor.

When concrete construction is used for constructing outside features like porch columns and roofs and mouldings, cornices and ornaments, the cost of the house is increased very quickly.

Concrete being a new material, the tendency is generally to cover it up to make it look like something else, and therefore most of the concrete houses built up to the present time have been covered with stucco. With a steel form that gives a good even line, concrete can be finished with a rubbed or wire-brushed or tooled surface that will be quite satisfactory in texture and in colour. And very artistic effects can be gained with the use of coloured aggregates. To finish with a wood float does not give a good result. The concrete house is superior to brick or any other type of house on account of its permanency, fireproof and weatherproof qualities, and pleasing appearance. No repointing is necessary, no efflorescence disfigures its surfaces. The all-concrete house combines with these advantages the absolute rigidity which is lacking in a wood-floored house, sticking of doors, settlement cracks in walls and in plastering are avoided, and there is no harbourage for vermin.

Building ordinances framed to control brick, tile, and stone construction before the extensive use of concrete in wall construction are in most cases unduly burdensome and restrictive when applied to concrete. Six-inch walls are the maximum needed in monolithic construction, and 2 ins. is common in precast construction where other structural members carry the load. Most codes call for 8 and some as much as 12 ins. in thickness. Similar difficulties are found with floors. A reform of the building laws is urgently needed, as in many of our own big cities, and the committee has in mind the preparation of a building code for concrete small house construction which will serve as a model for cities, and suggest that, after receiving the endorsement of the Institute, it be circulated and urged upon municipal authorities.

There is a widespread interest in America, as here, in the concrete house to-day. There is not, however, much active demand for it, owing to the dearth of contractors experienced in concrete work who are entering this new field to create a supply. The majority of the small houses built to-day are built for quick sale by the vendor and not for investment. House-building standards have been low. Competition in prices has been keen, but quality has been a secondary consideration. The demand at the present time seems to be for a better type of construction—concrete meets this demand.

ADVANTAGES AND DISADVANTAGES OF THE CONCRETE HOUSE.*

BY JOHN E. CONZELMAN.

It will be necessary to define just what is meant by the term "concrete house" as it is here used. We are accustomed to speak of brick houses, stone houses, or frame houses, the distinction being based on the construction used for the exterior walls. Similarly a concrete house could be classified as one with concrete walls. In such a case, the walls might be built of concrete blocks, of concrete poured in place, of unit construction, or of the plastered type of construction.

A house constructed with concrete walls of such character would have much in common with the brick or stone houses, and even with the frame houses mentioned. In such a case the question of whether or not it would be advantageous to use concrete walls would resolve itself into a matter of cost, and would be settled by the local conditions governing this particular problem.

It would be impossible to dwell much on the comparative advantages of such a concrete house. There are so many other things entering into the construction of a house of this type which require attention and which affect the maintenance cost that the type of wall used will have little effect on the final analysis.

When we come, however, to a consideration of the house in which the floors as well as the walls are made of concrete we have an entirely different proposition. Such a house cannot be considered as being in the same class with the others; the introduction of concrete floors has put it into the first class. The house has in fact become fireproof and permanent, and we realise that if all or most of the houses in a community were so constructed, the fire losses from individual fires as well as those resulting from a general conflagration would be nearly eliminated.

Those who are familiar with the devastation caused by rats, mice, and other vermin that find easy lodgment in the open walls and floors of frame or brick buildings, estimate the loss in property and in the health of the inhabitants at millions of dollars annually. Practically all of this loss could be avoided by constructing vermin-proof concrete buildings.

We are compelled by law, in practically all of our larger cities, to build factories, hotels, and apartment houses of fire resisting construction, and in the natural evolution of the thought, will surely be compelled at some time in the not far distant future to build our city houses of the same construction. As a believer in the precast or unit method of construction I can already see in my mind's eye concrete lumber yards rapidly replacing the present "wood lumber yards."

DEFINITION OF CONCRETE HOUSE

The concrete house shall therefore for the purposes of this paper be considered to mean a house of fire-resisting construction with concrete walls and reinforced concrete floors. Unimportant parts of the building, not comprised in the structural elements, may be built of other materials. For example, we would allow the wood floor finish to remain in such a house provided we cannot persuade the owner that a cement floor finish, although apparently hard and cold, is in reality a warm friend because it is sanitary and cheap.

The value of reinforced-concrete construction has been understood and appreciated for many years so far as factories, warehouses, docks, and commercial structures are concerned, and the growth of this class of construction has been little short of marvellous. It would indeed be most extraordinary if the same sturdy advantages which have been demonstrated in innumerable commercial structures would not apply equally well to the construction of houses.

The question may naturally arise at this point of the argument to the effect that if the above statements are true, why have more concrete houses not been built? The answer to this question is easily given. Factories and warehouses are built by men who figure the capital invested in connection with insurance rates, maintenance charges, depreciation value, and similar items, and who realise that the first cost is not always the last cost. Such men realise that by adopting concrete construction they can secure a building with the best fire-resisting and weather and wear-resisting qualities, and that as a result the total capitalised investments will be less at the expiration of five, ten, or twenty years than for cheaper forms of construction.

It has not been the custom to build houses on such a businesslike basis—and the first cost was usually all that was thought of. This is especially true of houses built to sell. The situation, however, is rapidly changing. Corporations and individuals are now realising that the housing accommodations for their employees are to be considered as a legitimate part of their plant outlay. They are therefore giving to the house-building problem the detailed study heretofore reserved for their industrial plants.

Under such conditions the advantages of the concrete house will be quickly comprehended, and its adoption is a foregone conclusion. A manufacturer who has constructed a colony of concrete houses for his workmen rests secure in the knowledge that no fire can interfere with his production, at least so far as labour is concerned; his investment is safeguarded, and if he cannot secure a low rate of insurance he will be justified in carrying it himself.

(*Continued on page 166.*)

* A paper read before the American Concrete Institute.

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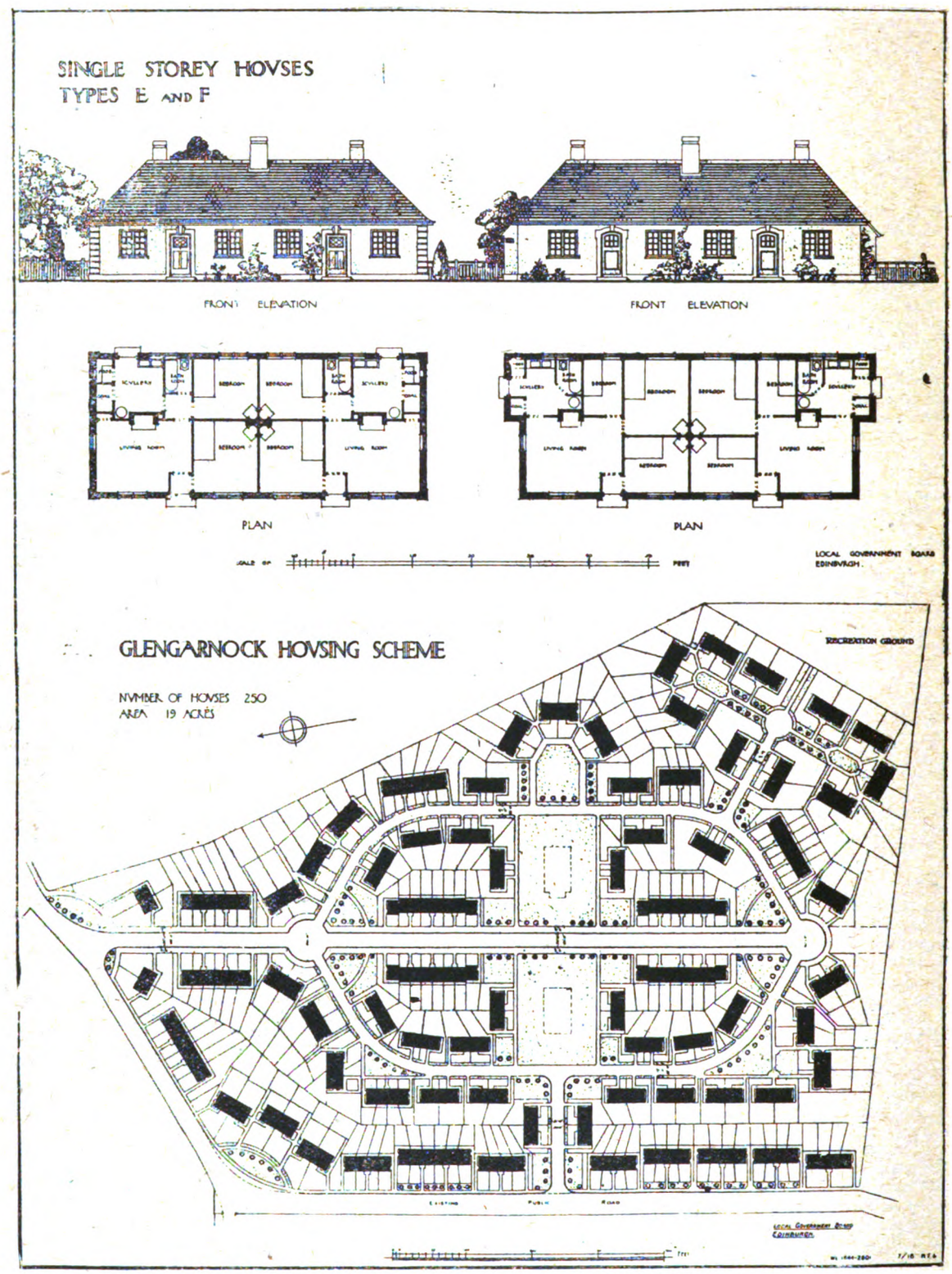

LOCAL GOVERNMENT BOARD FOR SCOTLAND.
HOUSES FOR THE WORKING CLASSES AFTER THE WAR.

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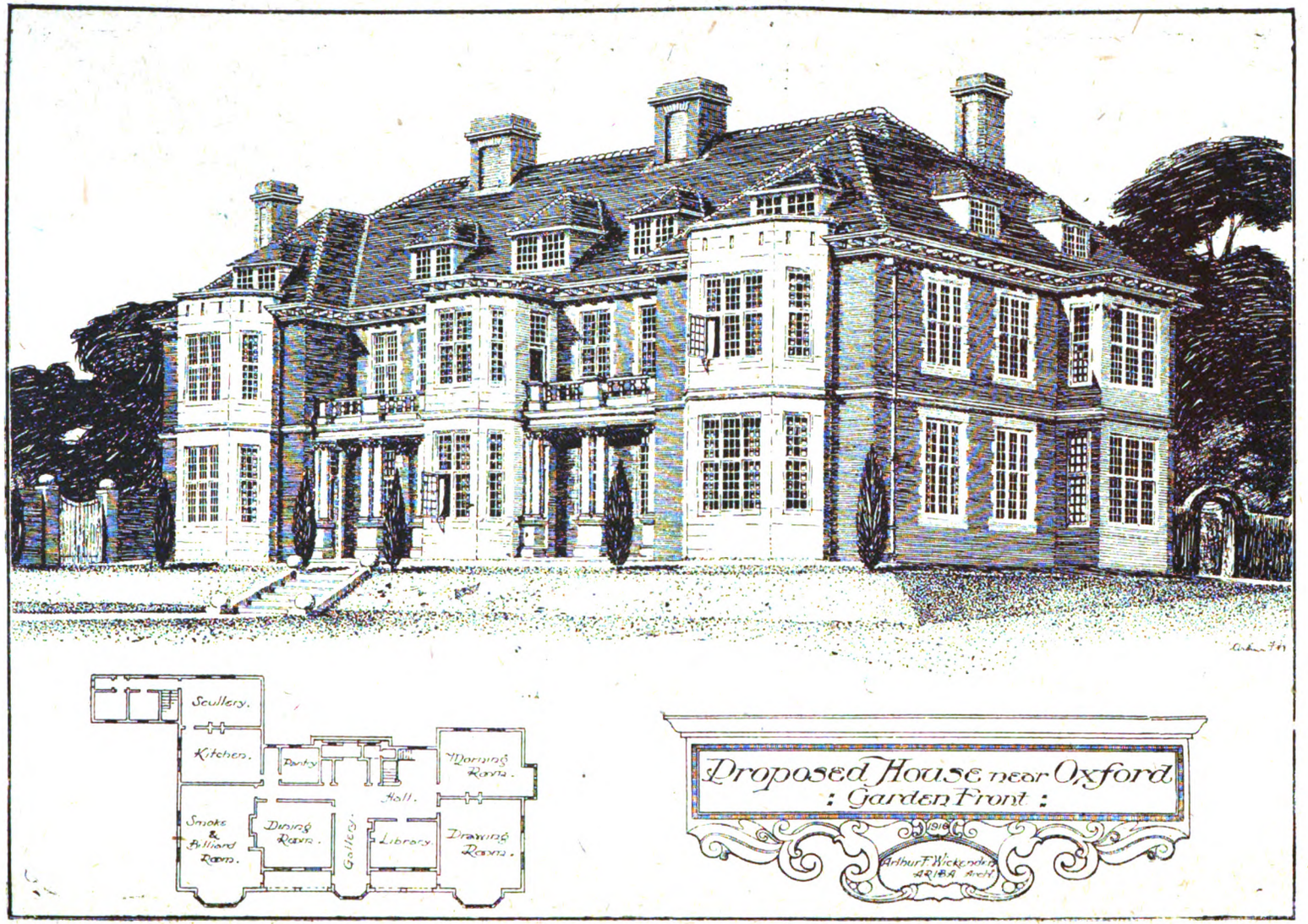

NEW HOUSE, NEAR OXFORD

CAPTAIN A. F. WICKENDEN, Architect.

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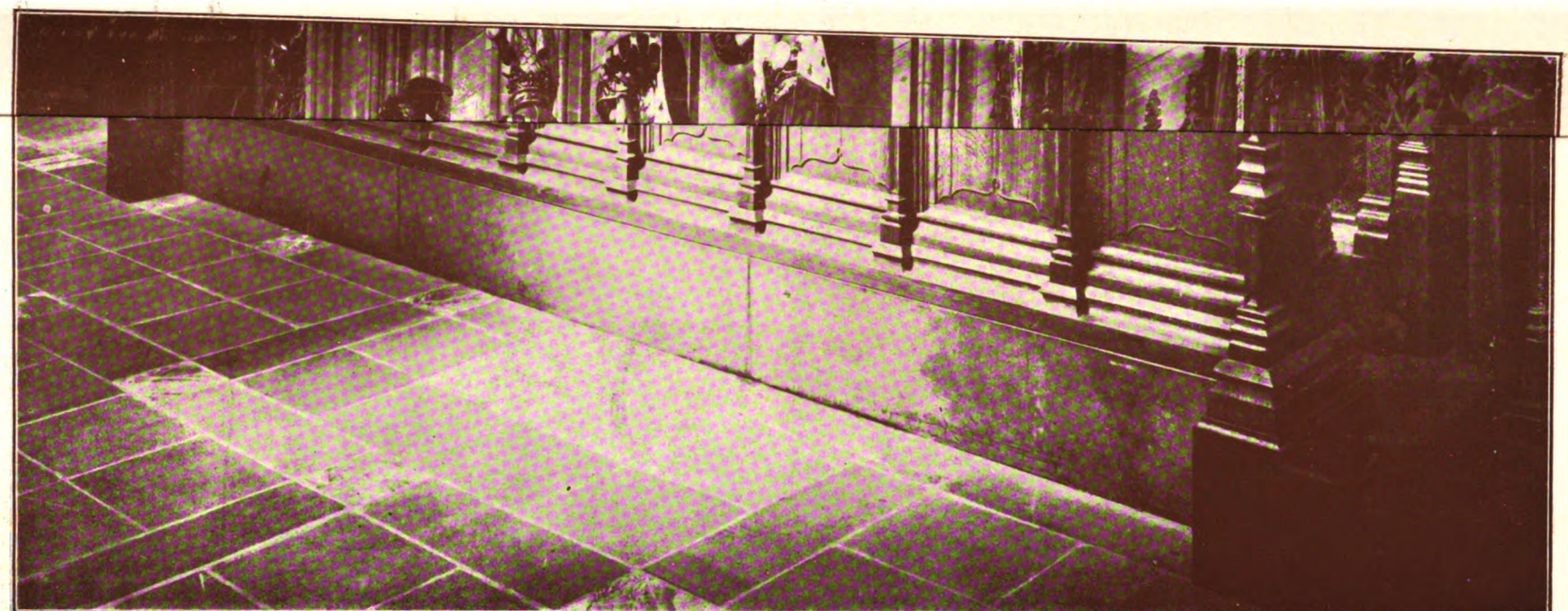

Alex. A. Inglis, Photo.]

CHAPEL OF THE ORDER OF THE THISTLE, ST. GILES' CATHEDRAL, EDINBURGH

SIR ROBERT LORIMER, A.R.S.A., F.R.I.B.A., Architect.

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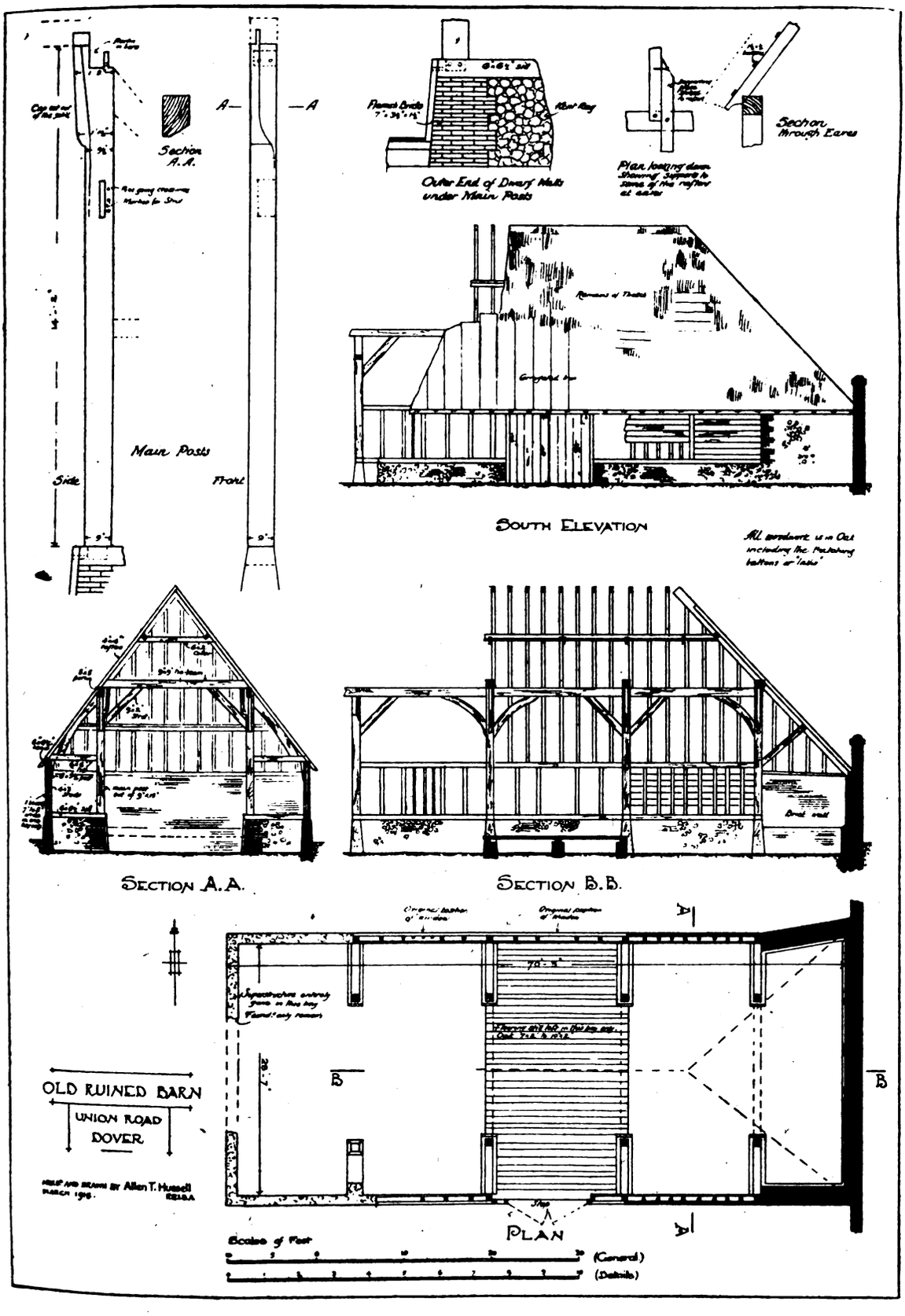

AN OLD RUINED BARN, UNION ROAD, DOVER.

Measured and Drawn by Mr. ALLEN T. HUSSELL, Architect.

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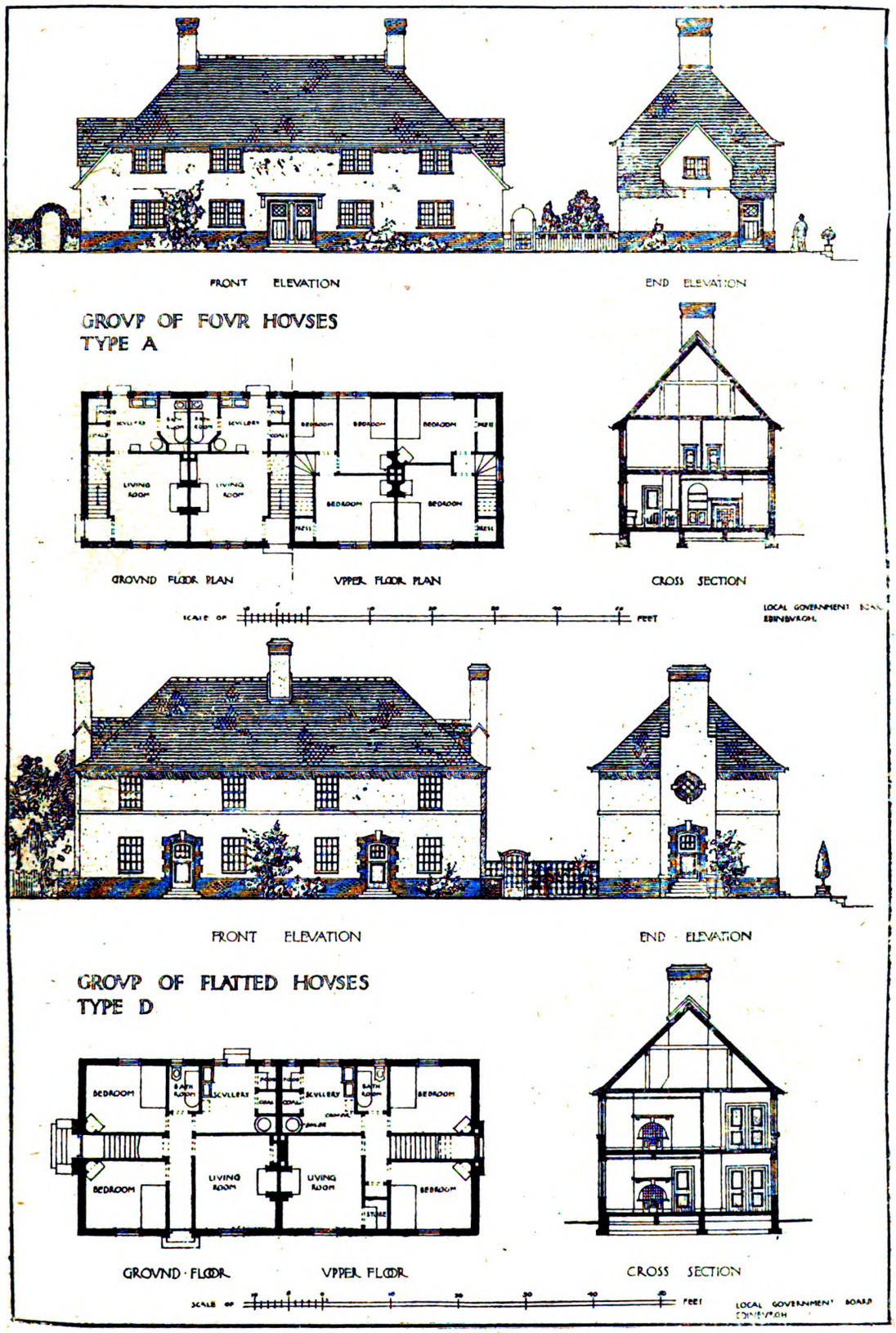

LOCAL GOVERNMENT BOARD FOR SCOTLAND.
HOUSES FOR THE WORKING CLASSES AFTER THE WAR.

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Our Illustrations.

CHAPEL OF THE ORDER OF THE THISTLE, ST. GILES CATHEDRAL, EDINBURGH.

The Royal Academy photograph (exhibited by Sir Robert Lorimer, A.R.S.A., this year in illustration of the interior of the Chapel of the Thistle at Edinburgh) which we published on August 7, showed the King's Stall at the end of the building. To-day we are reproducing the second photograph, which we selected from the same exhibition gallery. This picture gives a fine representation of the side stalls of this beautiful chapel, which we have previously been enabled to illustrate, when some excellent plates with a plan appeared in our issue of July 21, 1911, on the occasion of the opening of the building by the King. A description of the work appeared then. The stalls are in English oak, and were carried out by Messrs. Nathaniel Grieve and Co. from the details of the architect.

PROPOSED HOUSE NEAR OXFORD.

This perspective drawing, exhibited at the Royal Academy, 1918, shows the garden front of an intended country residence near Oxford, for which sketch plans were prepared previous to the outbreak of the war by Mr. Arthur F. Wickenden, A.R.I.B.A., A.M.I.C.E. The plan below the perspective gives the accommodation.

AN OLD RUINED BARN, UNION ROAD, DOVER.

This crutch-timbered structure formed one of the buildings on a farm situated in Union Road, leading from the London Road, at Dover. This farm has been given up for some years. From the rather scanty information that can be gathered, the barn is presumed to be at least 200 years old, and it may have been a tithe-barn. It is a very good specimen of Old English craftsmanship, entirely in oak throughout, all rough wrought. Most of the roof thatching is gone, and also the flooring is missing, except in one bay. The main timbers are elaborately jointed together and secured with oak pins. The walls—except the east one—batter on both faces, and the quoins are formed up with thin red bricks, as shown on the drawings, for which we are indebted to Mr. Allen T. Hussell, of Ilfracombe.

LOCAL GOVERNMENT BOARD FOR SCOTLAND: HOUSES FOR THE WORKING CLASSES AFTER THE WAR.

In our issue of August 21 we dealt at some length with the memorandum officially issued for the guidance of local authorities proposing to formulate schemes for housing the working classes when peace is declared. To-day we give some of the leading types prepared by the Scottish Office of Works to meet a variety of requirements on economic lines. The general scheme site plan, on one of the accompanying sheets, provided for the erection of 250 houses at Glengarnock, Ayrshire. The land is practically level throughout, and this fact has allowed the buildings to be set out on regular and formal lines. The houses are built in pairs or groups of six dwellings, with an average density of thirteen houses per gross acre.

Plan (Type A) illustrates a group of four houses, and shows what is described as probably the most economical arrangement of plan. Passages are reduced to a minimum, and there is an absence of waste space. The end houses have two bedrooms on the upper floor, and the intermediate houses three bedrooms. The bathroom is a separate apartment entered from the scullery. This arrangement has the effect of reducing to a minimum the length of piping required for the hot-water supply from the range in the living-room, but the arrangement otherwise is open to objection on the ground of convenience. No provision has been shown on the plan for direct access to the back gardens of the intermediate houses. This may be considered necessary, and may be provided by means of ends through houses or by access paths. This type of plan is not suitable for use on north frontages. The elevations are treated simply with brick base and rough cast walls. Houses of this type, with slight modifications in the details of the plans and elevations, have been erected at Glengarnock and Gourock, and at various sites in Lanarkshire.

Plan (Type D) shows a group of four houses of "flatted" type, each house having an independent entrance. The entrance to the bathroom is from the passage, and each house has a good-sized living-room, scullery, etc., and two bedrooms. Good cupboard accommodation is provided. The ground-floor houses have direct access to the back gardens. The want of similar access in the case of the upper-floor houses is not greatly felt, as the main entrance is at the side, and therefore entrance to the garden can conveniently be obtained. Each house is provided with a separate back garden. Houses of this type have been erected at Glengarnock, Gourock, and at various sites in Lanarkshire.

Plan (Types E and F) shows two types of houses built one story in height. Type E provides two bedrooms in addition to living-room, scullery, etc. It will be noted that one of the two apartments is entered from the entrance porch, and could therefore be suitably used as a parlour. The bathroom is entered off an independent lobby, to which, however, access is obtained through the living-room, an arrangement not altogether satisfactory. Type F has similar accommodation to Type E, but has a small third bedroom in addition. The arrangement of the plan is on similar lines. The bathroom, however, is entered directly off the scullery, and this arrangement is open to considerable objection. The bathroom in both types of plans is in close proximity to the living-room fireplace, and the necessary hot-water supply piping is thus reduced to a minimum. The single-story house, while it is easily worked, and therefore attractive to certain tenants, is not as a general rule an economical type to erect. In practice, however, it has been found that the examples illustrated compared favourably in cost with houses of similar accommodation built two stories in height. This may be due to the ease and rapidity with which this type can be erected, and to the small amount of scaffolding necessary. This type naturally involves wide frontages, and is therefore more particularly suitable for rural districts. Houses of this type have been erected in various places. Next week we shall give further examples by types B and C.

ADVANTAGES AND DISADVANTAGES OF THE CONCRETE HOUSE.

(*Continued from page 155.*)

PRESSING DEMAND FOR HOUSES.

At the present time there exists in many localities an enormous and pressing demand for houses for working men. It will be necessary to build houses by the hundreds, and in a few instances by the thousands, if the demand is to be met in the proper way. The necessity of safeguarding such large investments, whether the operation be financed by individuals, corporations, or the Government, is apparent. For this very thing the concrete house fulfils the requirements of such conditions better than any other type.

We all want to know facts and figures on the upkeep charges and depreciation rates on concrete buildings and also on the usual forms of construction. It is difficult to obtain reliable data on these subjects.

Mr. Prescott F. Hall, in a paper read at the National Housing Conference, 1916, has the following to say in regard to depreciation :—

"A recent canvass of twenty-two insurance companies, insurance agents, builders, and architects showed in their opinion an average depreciation of 1½ per cent. per year for brick and 5 per cent. for wood. On the cheaper class of wooden buildings, 5 per cent. is probably the more correct figure.

"In February, 1915, the Lloyd-Thomas Co., which has just completed an appraisal of the city of Wilmington, Del., amounting to $73.000.000 of assessed values, communicated to the Building Committee of the Chicago City Council the results of their findings as to the depreciation of the various classes of buildings as follows :—In the better residence the average age of the brick was nine years and the depreciation was 4 per cent., there being no depreciation in the first five years, and it being 1 per cent. yearly after that. In the frame the average age of the better-class residence was fifteen years. The physical depreciation was 20 per cent. and the obsolescence 10 per cent. Obsolescence is partly due to going out of style, and this is due largely to lack of architectural planning. The total depreciation was 30 per cent. In the middle-class residence the average age of brick and frame were the same, fifteen years, and the total depreciation of the brick was 20 per cent. and the frame 45 per cent., or two and one-fourth greater in the frame."

CONCRETE DEPRECIATION NEGLIGIBLE.

You will see that no data is given for concrete construction. However, the rate of depreciation for brick is given at 1½ per cent. per year. This is a low rate, and we know that the rate for concrete must be considerably less than for brick and wood construction. If it is much less, it will be a negligible factor. We will have to take upkeep, or repair charges, into consideration if we are to give concrete its proper due. Here again we must admit that we have practically no reliable data on upkeep charges, but will have to use our reasoning faculties to arrive at any result.

We are told by the cement manufacturers that "concrete is permanent," and those of us who have engaged in making concrete for many years know that this statement is true, provided suitable materials have been used and that these have been mixed long and well and in the right proportions.

Well-burned bricks are also permanent—perhaps not so permanent as concrete, but still sufficiently permanent to be considered so for all practical purposes. It is not in the walls, therefore, that we will find any great advantage for concrete construction. When we come to the consideration of the exterior woodwork, such as porch floors, railings and posts, to say nothing of steps, the advantage of concrete construction becomes very apparent. It is such items as these that make the upkeep of ordinary construction so high.

In a reinforced-concrete house the floors and vertical supports are rigid and unyielding, and so do not shrink. As a result there is little cracking of plastering and settling of doors, resulting in loose trim and sticking doors in a concrete house. These are the items that call for continual repairs, and which are eliminated from the upkeep charges of a concrete house. In some types of concrete houses the plastering can be omitted entirely.

In a consideration of depreciation and upkeep charges, it must be borne in mind that certain items which total a large part of the cost are common to both the concrete and ordinary constructed house. I mean such items as plumbing, heating and lighting fixtures, roof covering and hardware, and many others of a similar nature. These items will have practically the same depreciation in a concrete house that will exist in a brick or frame house and must therefore not be considered in a comparison of values.

It has been stated that the average economic life of a house—by which is meant its period of usefulness for the purpose for which it is built—will not exceed thirty-five or forty years in most American cities. It is therefore seen that we will have to make some effort to extend this period of economical life if we are to make full use of longer possible life of the concrete house.

SIXTY TO EIGHTY YEARS.

Such effort cannot be applied to the individual house, but must be a broad movement affecting the entire neighbourhood, if not the entire city. For lasting success, city planning and districting must come to the rescue and stabilise conditions and values. It should be possible, by such means, to prolong the economic life to sixty or eighty years, perhaps even indefinitely as has occurred in numerous European cities. If the economic life were doubled, enormous savings to the country would result.

Any discussion on the advantage of fire-resisting construction would be incomplete

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without taking into account comparative fire insurance rates. Mr. Grosvenor Atterbury, architect, has given some information on insurance rates on different types of residences now in force in the locality of Forest Hills, Long Island. He states that the ordinary rate in the vicinity of Forest Hills varies from 40 c. per hundred dollars value on brick houses to 60 c. on frame dwellings. The rates given covering a period of three years.

The house in Forest Hills Gardens, as you no doubt know, were built by the Sage Foundation Homes Co., and this development comprises a group of most modern and substantially built houses. Most of these houses are of special construction, with masonry walls and tiled roofs. Metal lath is used throughout, and all vertical supports are of metal or masonry. On this type of house the rate is 25 c. per hundred, Among these houses are several groups of concrete houses built under Mr. Atterbury's method of precast construction. These houses have cellular walls, reinforced-concrete floors and roofs, and may be classed as really fireproof construction. These houses receive a rate of 20 c. per hundred dollars valuation.

BUILDING CODES NEED REVISION.

The building codes of practically all cities are so framed that they practically discriminate against this form of construction. Instead of fostering the construction of fireproof houses, these laws have exactly the opposite effect. An example will best illustrate this point. The company with which I am connected is now constructing some concrete houses on Long Island. The floor slabs were of such size and design that a slab 2 ins. thick would have been entirely satisfactory from an engineering standpoint. The building code required a minimum thickness of 4 ins. for all floor slabs. In this particular case the structural concrete is to be topped with a layer of nailing concrete 1½ ins. thick, on top of which the wood finish is to be nailed. Had these houses been built with wood joist and flooring a single thickness of floor would have been sufficient. However, as the floor slab was concrete, it was decided that in addition to the wood floor just mentioned there would be required 5½ ins. of concrete. Such excessive use of materials seriously handicaps fireproof construction.

It is obvious that such inconsistencies must be remedied when the properties and advantages of such construction become more generally understood.

There are many of us who believe that houses should be built of standardised sections, just like automobiles. These sections would be made in factories under the most economical conditions of manufacture, and houses would be carried in stock just like other manufactured products. When we get to this stage of progress it will be possible to erect the walls and floors of a house in one day, or at the most, two days, and at a great saving in cost.

LENDS TO STANDARD CONSTRUCTION.

Concrete lends itself admirably to such standardised construction, and its fire-resisting properties and other features give it distinct advantages over all other building materials for this class of work.

In order to bring the rent or selling price of a house within the means of the poorer paid working man, it is necessary to avail ourselves of all possible economies in the design and construction. Even if we limit the conveniences to the minimum compatible with proper living, it is practically impossible to bring down the cost of a detached house to a point where such workmen can afford to live in them.

We can meet this condition, however, if we build the houses in groups or terraces; or at least, if we cannot meet it, we know that such construction is the cheapest that can be built. One great objection to building rows of houses of ordinary construction is the fire risk. Another vital objection is the possible spread of vermin. By building of fireproof concrete construction, we can overcome both of these objections and help a long way toward the solution of the housing problem.

It is impossible for anyone who has studied the concrete house proposition to dwell very strongly on the disadvantages of this kind of house. The advantages so far outweigh the disadvantages that one is inclined to talk of them, and let the disadvantages take care of themselves. And this is eminently the proper course to pursue, because the difficulties and disadvantages of the concrete house are all due to the newness of this form of house construction, and will be worked out in actual practice.

ARCHITECTURAL TREATMENT.

We have not yet evolved standard principles of architectural treatment that can be applied to concrete houses and produce pleasing effects. The ordinary architect is familiar with brick and wood construction, and uses these materials easily, and in time a special form of treatment for concrete houses will be developed. It is evident that the tendency will be toward simple and straightforward designs, because the requirements of the construction demand it. If we develop the architectural treatment along simple, wholesome lines with regard to securing effects by proportions of surfaces, we will have advanced the architecture of the workmen's house considerably.

Untreated concrete surfaces do not as a rule present a pleasing appearance, and most of us object to the monotony of such a surface. This condition is aggravated after a rain. It is possible to overcome this disadvantage by some sort of surface treatment without excessive cost.

It is often said that concrete houses are damp, and this opinion is generally held by the layman. We all know that the concrete block house was responsible for this thought, and that the methods of construction now in use will overcome this trouble. We should not blame any material for defects caused by its misuse, and a well-constructed concrete house is as dry as any other.

It is possible to build houses of concrete, houses that are fireproof, vermin-proof, entirely comfortable and wholesome, houses that are practically permanent, and have a negligible upkeep cost, and it is possible to do this at a price that makes the proposition an economical one from the purely business standpoint.

Why, then, should we hesitate to adopt such construction? The advantages even in the present state of the art so far outweigh the disadvantages as to make the latter negligible

ARCHITECTURAL DESIGN OF THE CONCRETE HOUSE.*

By E. G. PERROT.

With the growing importance of the necessity for permanent construction of good homes for the wage-earner is the all important one of materials for construction coupled with successful architectural design.

When viewing the successful creations of the small house for the wage-earner which found its early expression in modern industrial villages planned on Garden City lines, financed and built by industrial establishments, in England, notably at Port Sunlight, Bourneville and Letchworth, we are surprised to find the high character of the architectural treatment of these houses. Their cosiness and real homelike effect contrasts very strongly with our company houses in the United States, which will ever remain as one of the blots on the architectural horizon since the opportunity to combine the utilitarian with the æsthetic has been, it would appear, almost studiously avoided when it would have been possible with a little care and study to have approached nearer to that which we are now striving to attain, namely, cheap artistic homes for the wage-earner.

Concrete as a building material, having been used mostly in its early application to building construction and engineering work, has been left to the chaotic caprice of the uninitiated in the realms of fine arts to be developed more in a structural manner than has been good for the effect on the public at large. This has been so much so that the architectural profession has concerned itself less with the ornamental treatment of concrete than with its structural importance.

Good architectural design is based on unity, grace, and proportion. It is by the adaptation of the first and last of these fundamental qualities that concrete can simulate a design which might be suitable for any other material of a plastic nature, such as stucco on brick or hollow-tile, or of even simple types of brick buildings.

Many of our present types of domestic architecture lend themselves, with very little modification, to reinforced concrete.

In the treatment of the exterior design, a style that depends upon plain wall surfaces with well proportioned and properly related openings, with the avoidance of projecting mouldings, useless and meaningless ornamentations, etc., is the one which can easily be executed in concrete. It is very essential to studiously avoid moulded forming string courses and projections. Flat bands forming string courses and panels may be judiciously used when the style of architecture demands such treatment.

Whether the roofs are to be flat or high-pitched depends generally upon the climatic conditions of the locality in which the houses are to be built. We all know that the pitched roof in colour lends very much to the attractiveness of a house. A low walled and high roofed house more easily produces the effect of the house being part of the ground, or in other words, as growing out of the ground instead of simply standing upon it. This feature of making the architecture indigenous to the soil is the one which, more than any other, is so characteristic of the many beautiful industrial villages seen in England.

It has been found to be more economical in the cost of construction to build houses in groups or rows, limiting them to rows not exceeding eight or ten, than to build single or twin houses. A great many varied effects can be obtained in the group system by the use of projecting pavilions, gables, etc.

One feature that should be given consideration in the exterior of the concrete house is its colour. The unattractive mouse colour of concrete cannot be made to satisfy the colour instinct in man. It is for this reason that the poured concrete house, unless treated with a special aggregate or other means to enliven the colour, is bound to be a failure.

Where an extensive housing programme is contemplated, one method of using concrete which permits of beautiful colour effects as well as artistic design is by the cement-gun. It appears that much can be gained by a study of how the gun can be brought into more universal use in house building. In connection with stucco work along the Pacific Coast it has been very successfully employed, while in the East its use in connection with engineering structures has, of late, been brought into great prominence. There is still a big field for its application in connection with houses, which the writer feels will solve many of the complications of the problem.

The use of concrete blocks for houses is restricted to certain sizes and shapes of blocks, and, although made to imitate natural material, stone, their use is unartistic from the purely architectural point of view, and for that reason have not been adopted by architects generally. Walls built of rough concrete blocks, however, can be stuccoed with hand-placed mortar. Tile inserts, properly placed, make a very effective design, especially if the coloured tiles are judiciously used on piers, panels and in string courses.

Monolithic concrete walls can best be coloured by using coloured aggregates, surface scrubbed, thereby removing the outer film and leaving the coloured aggregates exposed to view. If it is possible to do this, the wall can be tool-dressed with a pneumatic tool after the concrete has hardened. From the writer's experience, a light pebble forming the fine and coarse aggregate in the concrete, with a scrubbed or tooled finish, makes an excellent exterior for poured monolithic walls. However, as this material is not available in all localities, it is necessary to adopt a treatment of the exterior that can be obtained by materials at hand, using tile inserts as previously mentioned above.

Therefore, if we are to look for a solution of the architectural expression of the concrete house, we must get away from what has hitherto been satisfactory from a purely engineering standpoint. We must remember that

* A paper read before the American Concrete Institute.

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a house, in order to be successful, must simulate the home spirit, and, if I may use the term, have a little of that quaintness which is not found in a great many "stiff" creations parading under the name of houses. Many are merely wooden or concrete boxes.

I realise that what I have said may not be very encouraging to those whose efforts have been put forth to advance concrete house construction, but if we are to place this construction in the class of other materials which have long since been recognised and used by all peoples as meeting aesthetic demands, we will have to adopt the same fundamental principles which form the basis of all true art.

UNITED STATES REQUIRING REGISTRATION OF ARCHITECTS.

Following is a list of the American States in which registration laws as affecting the practice of architecture have been passed, together with the names of the president and secretary in the respective Boards of Registration :—

California.—President, E. A. Mathews, 251, Post Street, San Francisco; Secretary, Fred L. Roehrig, Los Angeles.

Colorado.—President, Thomas F. Walsh, Denver; Secretary, Park M. French, Denver.

Florida.—President, Murry S. King, Orlando; Secretary, E. A. Ehmann, 135, E. Bay Street, Jacksonville.

Idaho.—President, C. F. Hummel, Boise; Secretary, Burton E. Morse, Twin Falls.

Illinois.—President, N. Clifford Ricker, Urbana; Secretary, Leonard F. W. Stuebe, Danville.

Louisiana.—President, Sam Stone, jun., New Orleans; Secretary, Charles A. Favrot, New Orleans.

Michigan.—President, George D. Mason, 80, Griswold Street, Detroit; Secretary, S. Eugene Osgood, Grand Rapids.

New Jersey.—President, Charles P. Baldwin, 45, Clinton Street, Newark; Secretary, William A. Klemann, First National Bank Building, Trenton.

New York.—President, D. Everett Waid, 1, Madison Avenue, New York; Secretary, William P. Bannister, 69, Wall Street, New York.

North Carolina.—President, Hill C. Linthicum, Durham; Secretary, C. E. Hartge, Raleigh.

North Dakota.—President, George Hancock, Fargo; Secretary, A. Van Horne, Fargo.

South Carolina.—President, C. C. Wilson, Columbia; Secretary, George E. Lafaye, Columbia.

Utah.—President, W. E. Ware, Salt Lake City; Secretary, W. H. Lepper, Salt Lake City.

Wisconsin.—Chairman, Alexander C. Eschweiler, Milwaukee; Secretary, Arthur Peabody (State Architect), Madison.

Stonyhurst College, Blackburn, is aiming at raising £20,000 as a war memorial, and the bulk of this sum will be devoted to the erection of new science laboratories.

A sub-committee of the Arbroath Social Centre Committee is to report on the question of accommodation, and Mr. A. Symon, architect, has been instructed to prepare a sketch plan of the necessary structure.

Mr. Albert F. D'Oench, a well-known American architect, died at his country home in Manhasset, Long Island, on July 20, after a long illness. He was 65 years old, and had practised his profession in New York since 1876.

The Northern Centre Conciliation Board of the Building Trades has sanctioned an increase of one penny per hour to workers in the building trades in Manchester and the district. The employers at Stockport, Ashton, Stalybridge, and Hyde have agreed that the new rates shall also come into operation in their districts as and from November 1.

Mr. Arthur Earle, a prominent benefactor of the new Liverpool Cathedral, has given £2,000 for the erection, at the close of the war, of a granite peace cross in the precincts of the Cathedral, or on some suitable adjacent spot. It is proposed that the space surrounding the cross shall be used for religious meetings of any denomination, political meetings to be excluded

Correspondence.

TRADE AND COMMERCE.

To the Editor of THE BUILDING NEWS.

SIR,—My Council desire, through your valuable medium, to place the following statements before the public at large, in the hope that the vital importance of the subject they deal with will be realised before it is too late and the nation finds itself committed to a policy little short of suicidal in its ultimate effects.

The exigencies of the war have led the Government to adopt control of practically the whole trade of the country; but unfortunately in doing so they have almost entirely neglected to make use of the services and experience of the merchant trading community of the nation.

As a consequence of this neglect, the interests of the public at large have suffered to an incalculable extent, while the merchant trading community as a class is now facing a position little short of disastrous. The Government has not only taken over the control of trade, but has also taken to trading on its own account, ostensibly to regulate supplies and prevent profiteering; but unfortunately—and owing, no doubt, to the inexperience of its officials—with results quite the opposite.

At the same time, Government officials have been very indiscreet in dealing with the detailed information which traders have been compelled to communicate to them, and this information has reached their competitors at home and abroad, and the result has been the practical confiscation of their entire business.

Our export trade with Continental countries such as France, Italy, and Portugal has been almost entirely taken out of the hands of the merchant traders, by whom it was worked up and developed, and handed over to British Government Departments and to organisations formed in those countries under official Government sanction (but trading for profit), who have had access to the fullest details of our business, and to whom our Government have in some cases insisted on handing over contracts already definitely entered into between British exporters and their foreign clients (including all profits accruing). Certain Government Departments are even now insisting that no consumer shall on any account place an order with a merchant house (see Admiralty Circular, C.P. 161579/18).

The sure and certain result of the present policy, if persisted in, will be neither more nor less than the utter ruin of the established business of a very considerable section of the community, a section noted for its energy and enterprise, and the jeopardising of our whole foreign commerce by the deliberate scrapping of the organisations of proved efficiency and adaptability through which it has hitherto been conducted, and the substitution for these of an immense bureaucratic organisation which will certainly kill all individual initiative and enterprise, and by its cast-iron methods drive our overseas customers "nolens volens" into the arms of our competitors.

Now, the restoration of our national financial position after the war will depend entirely upon the recovery of our export trade and its vast extension. No bureaucratic organisation can ever handle this trade with the efficiency and ability of the merchant traders, whose wide experience of foreign markets and the special handling which they require, both in respect of the class of merchandise to be supplied and the methods of finance, etc., is an asset of incalculable value to the nation, and which the nation as a whole must see is not scrapped, to its own irremediable and inestimable loss.

The iron, steel, tinplate, and metal merchants of this country, recognising the serious state into which the nation's trade is surely drifting, have formed themselves into a federation, in order, by every means in their power, to endeavour to remedy this state of things. They invite the other classes of the merchant trading community to form similar federations with the same objects, and to join in the united effort to remedy and prevent, as far as possible, the fatal ultimate results which are inevitable unless the methods adopted by our bureaucratic Government Departments are immediately corrected.

My Council considers that these Government Departments set up for war conditions only (and which would not otherwise have been tolerated for a week), desire, if possible, to perpetuate their existence, and if they are allowed to have their way now will wreck the whole system upon which our world-wide trade has been built up and established.

My Council fears that our Government officials are obsessed with the idea that the large organisations of manufacturers in Germany and the U.S.A. are examples to be copied in this country, forgetting that these were not imposed by the State, but were the outcome of the uncontrolled efforts of the commercial community, and that these organisations never attempted to interfere with the established channels of trade, but, recognising their very high value, made the fullest possible use of them.

Undoubtedly an immense amount of man power and expenditure could have been saved to the State during the war if from the outset the merchant traders of the country had been taken into consultation by the Government equally with the manufacturers and labour, and had been represented on the various committees appointed by the Board of Trade, the Ministry of Munitions, and the Ministry of Reconstruction.

Unfortunately, this has not been done, and merchant traders' interests are practically unrepresented on these various committees, which are composed almost entirely of Civil servants and representatives of high finance, manufacturers and labour. Unless this state of things is altered and their assistance is promptly asked and obtained by the State, the prospects for British trade and commerce after the war are almost hopeless.—Yours faithfully,

C. T. EVENNETT,
Secretary, the British Federation of Iron, Steel, Tinplate, and Metal Merchants.
August, 1918.

THE SCOTTISH LOCAL GOVERNMENT BOARD AND HOUSING.

Sir,—We have been told many times that this war would revolutionise our various modes of building construction, but where is the architect who could have foreseen five years ago that 2½ inch concrete slabs rendered with waterproofed cement would now be officially adopted for exterior walls in Scotland?

The tendency before the war was to increase the thickness of the walls to keep out the dampness, which was an unsatisfactory method, not only on account of the cost, but because a porous material will always conduct humidity. The only true solution is to use impervious materials for walls or to render a porous material with waterproofed cement.

No one objects to thin window glass because it is thin, for we all know it is impervious to moisture.

The most hygienic and the warmest house is one built of coke breeze or porous brick concrete plastered in the usual way on the interior (thus presenting the necessary absorptive properties for warmth, and also preventing condensation), together with an exterior rendering of ¾ inch of waterproofed cement, applied in two coats. Such a wall is warmer than the walls of rooms of most ancient castles built in the most ponderous manner.

The British Government have built many hundreds of cottages with 2⅝ inch coke breeze curtain walls which were rendered with ¾ inch of Pudlo cement. The very fact that the Scottish Local Government Board have adopted outer walls to be built of 2½ inch concrete slabs with external cement facings, should give great confidence to architects for their "after the war" schemes. (See the report in your issue of August 21 last.)

Some districts in Scotland are probably the most humid and bleakest parts of the British Islands, so that the lead of the Scottish Local Government Board can be safely followed.

Yours faithfully,
J. H. KERNER-GREENWOOD.
King's Lynn.

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Our Office Table.

At the meeting of the General Purposes Committee of the Rochdale Corporation on Wednesday last steps were taken in connection with the Borough Surveyorship consequent on the retirement of Mr. S. S. Platt, which takes effect on October 3—that is precisely 37 years since he was appointed surveyor. For ten years prior to that Mr. Platt was chief assistant in the surveyor's office. With so many professional men on war service it was not deemed advisable to throw the position open to public competition at this stage, and the committee, therefore, recommended that Mr. Platt's services be retained as consulting engineer at a salary of £200 a year, and that Mr. Henry Yarwood, at present assistant surveyor, be appointed Borough Surveyor *pro tem.* at a salary of £400 a year. Mr. Yarwood, who is a native of the Rochdale district, was articled as a youth to Mr. J. B. Bamford, a former land and mining surveyor in the town. Afterwards, some 36 years ago, Mr. Yarwood joined Mr. Platt's staff as second assistant, becoming chief assistant and deputy surveyor on the death of Mr. Smithson 25 years ago. Under Mr. Platt he has for many years had charge of the office and has been responsible for several important branches of the work of the department. He has organised the Corporation allotments scheme. Mr. Yarwood is a member of the Institution of Municipal and County Engineers by examination.

Difficulties having arisen with regard to the power of dealing with lands acquired by the National Trust for Places of Historic Interest or Natural Beauty, and of acquiring lands which, though not themselves of national interest or of natural beauty, are important for preserving or increasing the amenities of such properties, the Charity Commissioners have prepared a scheme extending the powers of the Trust. The scheme will require confirmation by Parliament. It is proposed that the National Trust Act of 1907 shall be extended to enable the Trust to grant leases of certain properties, described as inalienable in the Act, or any parts or part thereof, for such terms of years, at such rents, and subject to such conditions as the council of the Trust may think proper, with the sanction of the Charity Commissioners. It is also proposed that the Trust may acquire, by purchase, gift, or otherwise, and may hold without licence in mortmain any lands, buildings, and hereditaments, and any rights, easements, or interests therein or thereover, which, in the opinion of the council, it may be desirable to hold with a view to preserving, promoting, or augmenting the amenities of any previously acquired property of the Trust. No such property shall be acquired by purchase without the sanction of the Charity Commissioners, and property otherwise acquired shall be sold, within a period determined by the Commissioners, unless the latter shall by Order have sanctioned such acquisition or its retention.

The Town Planning Committee of the Manchester Corporation, have been engaged for seven years in preparing schemes for the development of certain areas of the city, particularly on the southern side. In this work they have had the assistance of Mr. John Lake, city surveyor. The plans the committee have prepared were shown last Wednesday in the Council Chamber of the Manchester Town Hall to members of the Sheffield Corporation, who had come to Manchester primarily to inspect the plans of the Civic Survey relating to South-East Lancashire.

Activity in the Canadian building trades, as indicated by the value of building permits issued in thirty-five cities, showed a decrease during June as compared with the previous month, the total value of building permits falling from $4,838,053 in May to $3,667,399 in June, a decrease of $1,171,554, or 24.2 per cent. Manitoba and Alberta recorded increases, while Saskatchewan remained practically stationary. As compared with the corresponding month of 1917, there was a decline of 9.2 per cent., the value for June, 1917, being $4,038,511. In this comparison there were gains in Nova Scotia, Ontario, Saskatchewan, Alberta, and British Columbia. Of the larger cities, Toronto reported increases both as compared with the preceding month and with June, 1917. Winnipeg showed a gain as compared with May, but a decline as compared with June of last year. Montreal recorded decreases in both cases, while at Vancouver there was a decline as compared with May and an increase in comparison with June, 1917. Of the smaller centres, Three Rivers, Fort William, Peterborough, Regina, Calgary, and Edmonton all showed increases in both comparisons.

It has been found that the minimum air supply that a man can breathe and work under is 1.5 cubic feet per minute. Thus the fundamental formula of air supply for divers is $S=1.5\ (1+F.0303)$, where S is the cubic feet of air required and F the depth in feet to which the dive is to be made. The depth to which a diver may go is limited by the fact that oxygen under pressure becomes a poison when breathed. The real danger due to oxygen pressure is at about 10 atmospheres pressure absolute, or 297 ft. for appreciable periods. This increases with the depth, and at fifteen atmospheres absolute pressure even the shortest stay would be dangerous.

The statement of affairs of Mr. Joseph Phillips, sculptor, of Arnold Street, Liverpool and lately of Rothay Holme, Ambleside, has been issued. It shows gross liabilities of £3,095, of which £770 is expected to rank for dividend, and the assets are estimated to produce £949. He attributes his position to general depression in his class of business during the past three years, owing to the war, and to losses sustained in connection with a pottery venture at Newsham, near Blyth, Newcastle. The Official Receiver pointed out that the debtor commenced business about fifteen years ago as a sculptor at Altrincham, without capital, and moved to Liverpool in connection with work for the Liverpool Cathedral. Some ten years ago he purchased Rothay Holme, Ambleside, for the purpose of a summer art school, raising the whole amount required on the security of first and second mortgages over the premises. About five years ago he took some premises at Newsham and commenced experimenting in handmade pottery, but discontinued this in December, 1916.

An instance of how an undated official letter caused trouble between a Northern firm of Government contractors and their employees was related at the Munitions Tribunal at Caxton Hall, London, on the 26th ult. The Committee on Production made an award directing the payment of 12½ per cent. war bonus to painters engaged on Army contracts in a certain district, and at the same time the district rate for painters was increased from 8½d. to 10d. per hour. Neither the increase nor the bonus was paid by the firm concerned in this case, and the matter became the subject of questions by Mr. R. McNeill in the House of Commons. The firm, in their defence, now contended that they had already made a loss of £2,000 on their contract, and wanted the assurance from the Government authorities that the contract price would be increased. They wanted to keep on good terms with their employees, but no date was given in the letter as to when the award came into force. Meanwhile a dispute arose over the contract price with the Army Contracts Department. The firm had no desire to have any trouble with their workmen, and were now prepared to undertake to pay the arrears due to all their employees. The Chairman (Sir A. Hopkinson) said that there must be a penalty, but in view of the firm's offer it would only be a nominal one of £5.

"David's Temple," a church built early last century in York County, Ontario, Canada, has been purchased by the York Pioneer and Historical Society to be used as a museum for historic relics. The old church, erected by the late David Wilson, head of a religious sect known as the "Davidites," took six years to build, is entirely of wood, and to-day is in a remarkable state of preservation. The lasting qualities of wood were never better exemplified than in this structure. White pine was used in the main. Many years ago remarkable religious ceremonies were celebrated in the Temple by the "Children of Peace," but for a long period the building has been neglected. Work on the church was started in 1825. It is three stories high. The church contains nearly 3,000 panes of glass in the windows and spires, and has a symbolic meaning attached to all its parts. An altar that took 365 days to build stands on twelve gilded pillars representing the twelve Apostles, and is emblematical of the religion of Christ. The building was intended to be used fifteen times during the year; never at any time for Sunday worship. Services were held on the last Saturday of each month, when the members made contributions for charitable purposes. The first service was held October 29, 1831.

A report on the progress of the ordnance survey states that the revision of maps on the scale of 1/2,500 was continued with one-sixth of the pre-war staff, and large portions of the counties of Buckingham, Derby, Durham, Essex, Hertford, Northumberland, and Oxford have now been more than twenty years unrevised in the field. If the revision continues at its present diminished rate, the public must be prepared to use obsolete 25-in. maps of some of the most important counties of England. The arrears of 6 in. publication are even heavier. To promote economy, counties whose population is less than 100 per square mile have now been marked for forty-year instead of twenty-year revision. For the reports of the Boundary Commissioners 400,000 maps were printed.

At a sitting of the Norwich Consistory Court on the 24th ult., the Chancellor (Mr. F. K. North) made some observations on the question of war memorials in churches, a subject which, he said, the House of Convocation, under the direction of the archbishops and bishops, had been taking into consideration. To some extent there was a danger that the churches, which were heirlooms of the greatest merit, might be impaired and gravely detracted from by over-decoration, and by the walls being covered with memorials. We had only to go to such places as Westminster Abbey and Bath Abbey to see what that meant, and what he believed was in the minds of the heads of the Church in coming to the conclusion that the whole subject must be carefully considered. The subject was still in its first stages; but certain of the Chancellors had been approached in the matter, and asked to take it into consideration. Naturally people who had lost their dear ones wished to have memorials erected, but it had been suggested that it would be very much better if, instead of there being separate and individual memorials, we should wait until the end of the war, and then erect joint memorials to the men who had fallen.

The Arbroath Town Council have been contemplating the acquisition of the Public Hall from the Public Hall Buildings Company, to be used for municipal purposes. Last Friday Provost George Rutherford Thomson announced that Sir Francis Webster, of Ashbrook, Mr. William Webster, of Denley, and Mr. James Webster, London, of the firm of Messrs. Webster and Sons, textile manufacturers, Arbroath, had purchased the hall for £2,500, and intended to present it to the town, along with £450 to meet expenses in improving the hall and making it suitable for its new purposes. It is stipulated that the name of the hall be changed to "The Webster Hall."

The annual report of the Director of the National Gallery for 1917, issued last week, states that the numbers of visitors to the Gallery during the year were:—Free days, 212,574; Sunday afternoons, 40,584; students' days on payment of 6d., 18,060. The daily average attendance on free days was 1,047 and on Sunday afternoons 780. The number of acquisitions was 64, nine being bequests, 49 gifts, and six purchases.

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CHIPS.

Mr. Charles Rogers, of Clydeside, Acraman Road, Southville, Bristol, quarry master, has left £28,288.

It is proposed to build a new wing to the Crewe cottage hospital as a memorial to the late Alderman Wm. McNeill.

The available cash funds of the Amalgamated Society of Carpenters and Joiners amount to £288,000, the political fund balance exceeding £2,100.

The Rotherham Corporation has decided to proceed with the erection of a cold storage building. Mr. J. Platts, of High Street, Rotherham, is the architect.

Mr. Maurice F. Beadel, of the firm of Messrs. Beadel, Wood and Co., has been elected President of the Essex Valuers' Association for the ensuing year.

An extension is to be made in Australia of working men's college buildings at an estimated cost of £100,000 for the purpose of teaching returned soldiers technical trades.

The death is announced, killed in action, on August 27, of Captain Lenox Paton Figgis, M.C., The Buffs, elder son of Mr. T. Phillips Figgis, F.R.I.B.A., and Mrs. Figgis, 10, Campden Hill Square, W., aged 25.

The board of George Trollope and Sons and Colls and Sons, Ltd., propose to pay on the ordinary shares a dividend of 6 per cent., as against 4½ per cent.; to place £5,000 to reserve; and to carry forward £22,719, as against £21,366.

At Sleaford, last week, Frederick Hipkin, relieving officer, was fined 5s. for failing to shade and reduce a light from a dwelling-house at Sleaford on August 14. Defendant urged that the constable saw the moonlight on the wall of the opposite house, and he ought not to suffer for his error of judgment.

Mr. Thomas Wilson, journalist, Manchester, Cornet of the burgh of Sanquhar, and a well-known antiquary, is the recipient of a wallet of Treasury notes, and a gold appendage bearing the arms of Sanquhar burgh, in recognition of his many services to his native burgh, but more especially in connection with his researches into the history of the town and district. Among Mr. Wilson's best known works are "Memorials of Sanquhar Churchyard" and "Burns and Black Joan."

Holding that there was no felonious intent, the Derby magistrates last week dismissed a summons against Walter John Gale, scaffolder, Needle Place, Wollaton Street, Nottingham, for stealing a hammer, value 5s., belonging to McAlpine and Son, by whom he had been employed at Spondon. Defendant was transferred to another job, and had the hammer, which he had been using, in his possession when he presented himself at the pay office at Spondon.

The permanent shrine for Hyde Park, which has been designed by Sir Edwin Lutyens, A.R.A., is to be built of white plaster, and will be oblong in form and about 70 ft. in length. At either end will be pylons rising to 40 ft. from the ground. There will be inscriptions on both pylons, and also on the great stone on an eminence in the centre. The public will be able to mount six steps running the length of the shrine at either side and lay their flowers on a wide ledge. It is hoped that the shrine will be ready about the end of this month.

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TENDERS.

***Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BURY ST. EDMUNDS.—For painting and distempering the Feoffment Boys' School, College Street, and St. Mary's Girls' and Infants' Schools, for the Bury Education Authority:—
Lofts, R., Angel Hill £34 18 0
(Accepted.)

COLCHESTER.—For engines and dynamos, for the Town Council:—
Davey, Paxman and Co., Ltd., and Crompton and Co., Ltd.
(Accepted.)

LYMINGTON.—For remedying defects at the second borehole at Ampress, for the Lymington Town Council:—
Isler and Co. £120 10 0
(Accepted.)

TIVERTON.—For repairs to the workhouse, for the Guardians:—
Grater, R. £33 0 0
(Accepted.)

LIST OF TENDERS OPEN.

BUILDINGS.

Sept. 6.—Erection (under permit) of two cottages.—For the Godalming Town Council.—Specifications and quantities can be obtained and plans and conditions inspected at the Municipal Offices, Bridge Street, Godalming.

Sept. 7.—Painting various bridges in Manchester. For the Paving, Sewering, and Highways Committee.—City Engineer's Office, Town Hall, Manchester.

PAINTING.

Sept. 5.—Painting and decorating at the isolation hospital, Beddington Corner, near Mitcham Junction.—For the Wandle Valley Joint Hospital Board.—E. J. Gowen, Clerk, Council Offices, Purley.

ROADS.

Sept. 11.—Delivery at Braintree railway station of about 600 tons of 2 in. broken granite.—For the Braintree Urban District Council.—Forms of tender from H. H. Nankivell, Surveyor, Vestry Hall, Braintree. Tenders to H. J. Cunnington, Clerk.

SANITARY.

Sept. 9.—Cleansing and emptying the closets and ashpits within the Mottram Ward and the Broadbottom Ward of the urban district (One Year).—For the Mottram-in-Longdendale Urban District Council.—S. Hudson, inspector of nuisances.

Plans have been approved for new schools in connection with St. Dunstan's R.C. Church, Moston, Manchester.

Portsmouth Town Council have decided to secure the option of purchase of 500 acres of land on the southern slopes of Portsdown Hill, about three miles out of the town, for after-war housing purposes. Steps are being taken to extend the borough boundaries to include the new site.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

It is particularly requested that all drawings and all communications respecting illustrations or literary matter, books for review, etc., should be addressed to the Editor of the BUILDING NEWS, Effingham House, 1, Arundel Street, Strand, W.C.2, and not to members of the staff by name. Delay is not infrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

ADVERTISEMENT CHARGES.

SITUATIONS VACANT.

The charge for advertisements for "Situations Vacant" is Two Shillings and Sixpence for Twenty-four Words, and Sixpence for every Eight Words after. *All Situation Advertisements must be prepaid.*

SITUATIONS WANTED AND PARTNERSHIPS.

The charge for advertisements for "Situations Wanted" and "Partnerships" is One Shilling for Twenty-four Words, and Sixpence for every Eight Words after.

RECEIVED.—C. C. Co.—A. J. G.—Van A. and C.—W. L.—B. A. Co., Ltd.—T. Bros.—T. J. S.

NON NOBIS.—Yes.

M. H.—Thanks, no.

SEPIA.—We know no such firm.

STUDENT.—If still in print, "Sanitary Law, in Question and Answer," published in 1910 by Longmans, at half-a-crown, is the most useful little book of the kind we know. It was by Dr. Charles Porter, the M.O.H. of Marylebone.

E. R.—Our recent past issues in which the Local Government Board and R.I.B.A. premiated designs for workmen's dwellings have been illustrated are those of April 10, 17, 24, May 1, 8, 15, 22, 29, June 5, 12, 19, 26, and July 10 and 24. The fourteen numbers can be had post free for 7s. 6d. The seventeen illustrated articles by Mr. Robert Thomson on "The Problem of the Perfect Dwelling," which appeared in our issues of from April 10 to Sept. 19, 1917, can still be had for 9s. 3d. post free. The two series will be found of the greatest service to all likely to be engaged in the coming housing schemes.

Arrangements are to be made to provide a permanent war memorial at Wellington, Salop. Mr. J. W. Clift (Chairman of the Urban Council) is convening a public meeting to decide what form the memorial shall take.

A silver penny of William II. (Rufus), struck at Marlborough Mint soon after 1087, was recently bought at a London auction sale by a Marlborough resident, and has thus, after over 800 years, returned to a permanent home in the town where it was minted. The coin is so rare that no specimen is to be found in the British Museum.

We are pleased to learn that Miss Margaret Chilton, who is already well known in the West Country for her excellent productions in stained glass, has been favoured with some important commissions in the North. As these duties will occupy her for some little time, she has found it advisable to make Glasgow her headquarters for a while, as that place is an important centre for all matters pertaining to the arts and crafts. All communications should be addressed to her at the Abbey Studio, 23, Charing Cross Mansions, Glasgow, where she will continue to carry out any work for her patrons.

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September 11, 1918. Volume CXV.—No. 3323.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

The Chibnall Memorial, Parish Church, Broadway, Hammersmith. Mr. Maurice B. Adams, F.R.I.B.A., Architect.

The Tempest Memorial, Tong Church, Bradford, Yorks. Mr. Frank L. Pearson, F.R.I.B.A., Architect.

Interior of the Chapel, Ightham Mote, Kent, and a typical Kentish Cottage at Leeds, from sketches by Mr. Maurice B. Adams.

Local Government Board for Scotland. Houses for the Working Classes after the War. Types B. and C.

Putteridge Park, Luton, Bedfordshire. Detail of the east-end gable of the south front over Boudoir. Messrs. Sir Ernest George, R.A., and A. B. Yeates, FF.R.I.B.A., Architects.

Currente Calamo.

The Local Government Board have notified a Metropolitan Borough Council that the Treasury regret that they are unable to sanction a charge against public funds for the reimbursement by the Government of the whole or part of the cost of making good damage done to public works, sewers, and other underground works through enemy air raids. Merely another piece of meanness, which has and will probably saddle the poorer Metropolitan boroughs with the cost of damage which surely all London should be indemnified for equally? As it is, the districts which have suffered the most heavily in person at the hands of Fritz will have to pay in purse, while the West End will pay lighter rates at their expense.

A legal mortgage of house property always looks, and often is, as good a security as can be got for a loan of money. Yet, even here, risks have to be run and surprises are possible. The law does its best to take care of mortgagees; but equity, which is supposed to be based on abstract justice, sometimes brings in a principle, and then anything may happen. The equitable doctrine of "Constructive Notice" is a pretty specimen of these hidden dangers, which are only known to the Higher Conveyancing, as we may call it. In the recent case of "Meyer v. Charters" the plaintiffs sued for foreclosure of their mortgage on a leasehold dwelling house. The mortgage itself was all right, signed by the legal owners of the house, and the mortgagees held the deeds, which proved their legal title. But, in fact, those persons, who were the mortgagors, were only trustees under a settlement which gave them no power to mortgage the property. So, although their legal right to sign the mortgage was clear on the title-deeds, the mortgagees could not enforce it unless it was shown that, when taking up the mortgage, they had no notice of this settlement. Now, it was proved that they had never heard of it, nor did it appear on the title, and it had doubtless been forgotten by the trustees and all concerned. But it seemed that the solicitor acting for the mortgagees did know of the settlement, though he said nothing about it to his clients. The problem for Mr. Justice Neville was to say whether or not this knowledge by their solicitor (who had since retired) amounted to constructive notice of the settlement to his clients, the mortgagees, so as to prevent their foreclosing on the mortgagee. The judge held that it did, and so, as the mortgagees had "constructive notice" of a breach of trust, their action was dismissed, on this doctrine of equity. But the trustees themselves remain liable upon their personal covenant in the mortgage to repay the loan!

The following resolution has been sent by the National Federation of Building Trades Employers of Great Britain and Ireland to the Prime Minister and the Minister of Reconstruction: "That, in the opinion of this Federation, owing to the arrears of work in the building trade, together with the immediate industrial needs after the war, it is essential that Government Departments and public bodies throughout the United Kingdom should for a suitable period after the war refrain from commencing any large building or constructional work unless of very urgent national importance." We incline to agree, as regards Government buildings, but there are not a few other public buildings still waiting for a start, and wanted, on some of which work and material of a higher standard than in the majority of ordinary character is indispensable; and with our past and present experience of the veto exercised by Government officials, we think it is hardly wise on the part of any representative body of the building industries to encourage its continuance in any shape or form.

The Road Board investigated during the last year the various schemes proposed by the London Arterial Road Conferences of 1913-15, and their reports on the suggested Western Avenue and the North Circular Road are included in the annual report of the Board, now issued as a Parliamentary Paper [94]. According to the final proposal of the Conference, the Western Avenue, which was recommended as a new arterial road to the West for the relief of the Oxford road, would be an almost entirely new road, over fifteen miles long. It would start from Blenheim Crescent, Kensington, cross into Silchester Road, and under the West London Railway, beyond which point the route lies principally across open country to a point in the Oxford road about a mile beyond Uxbridge, where the new avenue would end. It would thus run roughly midway between the Harrow and Oxford roads. The Board say that the traffic on the Oxford and Harrow roads has not yet reached such a degree of intensity as to require the immediate construction of the Western Avenue at the cost of public funds, "but the growing traffic cannot be provided for by widening the existing roads, which moreover would be so costly a proceeding as to be regarded as impracticable." Why wait, then, till "the degree of intensity" renders the existing roads chock-a-block? That, as usual, seems the policy of the Road Board, while it spends another £5,000 on a detailed scheme of the road requirements of the area considered as a unit and determining the ultimate complete cost of the scheme. The Board consider that, for the purposes of a ring road intersecting all the radial roads, and thereby enabling traffic approaching London from the country to switch from one main road to another without entering the metropolis, the proposed North Circular Road is too near London. The purposes of a ring road would be better secured by the improvement of the outer North Circular Road that already exists at a radius of twenty miles from Blackfriars Bridge, on the line Staines-Rickmansworth - Watford - St. - Albans - Ware-Harlow-Brentwood-Tilbury. We are not by any means sure of that, and incline to regard the suggestion as merely an excuse for doing nothing.

Lord Desborough, the chairman of the Land Union, points out that Part IV. of the Corn Production Act, 1917, dealing with the enforced cultivation of land, should have come into force on August 21, 1918, and under that part certain rights of appeal and compensation were granted. The Government, however, wished, until the conclusion of the War, to exercise the powers which they claim under the Defence of the Realm Act Regulations, and introduced what is now the above Act, granting them the continued use of such powers. The Bill as introduced contained no rights of appeal and no statutory right to compensation, and consequently it was

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subjected to considerable opposition. The Government, admitting the reasonableness of the criticisms advanced, accepted certain amendments, and the present position is as follows:—(1) If a notice is served ordering a change in the mode of cultivation or in the use of the land (*e.g.*, the ploughing up of pasture), or determining the tenancy of any land, although such notice is issued under the Defence of the Realm Act, the farmer will have a right of appeal to an independent arbitrator. There is, however, this qualification—that if the notice is served "solely for the purpose of securing that the land shall be cultivated according to the rules of good husbandry," no appeal is allowed, unless the notice is one determining a tenancy. (2) If the Board of Agriculture or their agents decide to enter into possession without in fact determining the tenancy, notice will be served and a similar right of appeal granted before such possession is taken. Should, however, the land be required for gardens or allotments, or possession is taken solely to secure good cultivation, no notice will be served and no appeal will be allowed. (3) Where an appeal is given, the owner and occupier have the same rights of appeal, and notices will be served on both. (4) Where any loss is suffered owing to the carrying out of orders issued by the Board of Agriculture or their agents, compensation can be claimed, and in default of agreement will be assessed by an independent arbitrator instead of by the Defence of the Realm Losses Commission, and the farmer can now claim this compensation as of legal right instead of, as heretofore, merely as an act of grace. These concessions are doubtless of very great importance to all those interested in agriculture, and should do much to abolish any friction between agriculturists and those responsible for the issuing of compulsory Orders; but we confess, after our experiences of the vagaries of officials of late in every Department of the present bureaucracy, to many doubts whether they will be fairly administered.

Several inns have changed their names from those of German associations to more English ones, and quite rightly too. War time has often helped to bring about similar homage by Bung to the heroes of the time. Happily, he has had no need to resort to a practice common at the time in Spain during the Peninsula War, when many signboards and hotels in Spanish towns bore on one side the arms of France and on the other those of Spain, and the side most pleasant to the occupants was turned out as circumstances seemed to demand. Here, now and again, changes of that sort have not been always deftly managed! It is said that in the Lake district an inn previously known as the "Cock," was changed to "The Bishop of Llandaff" when that pillar of the Welsh Church went to stay in the district. But it was probably deemed desirable that tourists should be reminded of the doubtless good repute of the old sign; and, so, under the prelate's head appeared the words: "This is the old Cock!"

RECONSTRUCTION AND PROFESSIONAL CLASSES.

BY ARTHUR F. WICKENDEN, A.M.INST.C.E., A.R.I.B.A., P.A.S.I.

A letter recently appeared in the columns of one of the leading technical journals calling attention to the question of reconstruction of professional institutions.

The subject is, of course, one that has been raised very many times, but never was it more urgently in need of serious discussion than at the present moment.

The future of those people who in pre-war days took great pride in the designation of "professional classes" is dependent upon their ability to so reconstruct themselves in their various composite bodies as to fit in with the new scheme of affairs which will undoubtedly exist when peaces comes once more.

The middle classes, from whose ranks the majority of professional men are drawn, have always shown a positive dread of any combination that savoured of trade unionism, but it appears certain that unless the professional man is prepared to be pushed into the background he must see to it that he is an active member of a live society, whose chief function is not to arrange for the reading and discussion of a few more or less interesting papers, but whose policy is to raise the status of the profession which it represents and obtain powers to safeguard the interests of its members.

The writer of the letter above referred to suggested that it is primarily essential for each profession to have its one acknowledged representative body.

This is obviously a sound proposition, but up to the present the accomplishment of this fundamental necessity has proved the stumbling block. The senior institutions have always found it impossible to solve the difficult problem of absorbing the less important societies without seriously lowering their status by admitting to their ranks men of questionable calibre or professional adventurers.

Anything which would tend to reduce the standard of efficiency necessary to membership of the representative institutions must, of course, be rigidly avoided; on the other hand, however, these institutions must show signs of being numerically representative before they can hope to obtain through legislation powers to enforce their demands.

Previous attempts made in various quarters to attain unity of representation have failed through the endeavour to avoid injury to anyone concerned, with the result that weak and compromising proposals have been put forward and turned down. To successfully carry out drastic reforms it is not possible to meet individual grievances but only to frame definite regulations based on equitable principles and adhere strictly to them.

It does not seem unreasonable to suggest that all men up to the age of, say, 45, or even 50, should be required to prove through examination their knowledge of the science or art they profess to practice. All men over the limiting age might be given the hall mark of efficiency if a thorough and honest investigation of their executed works revealed worthiness of it.

The indiscriminate use of the titles engineer, architect, surveyor, valuer, estate agent, etc., by unregistered persons should be illegal.

The owner of a copy of "Everyman His Own Lawyer" cannot practise as a solicitor, but the proud possessor of a pocket-book of engineering tables often feels quite at liberty to pose as an engineer, and, to make the part more realistic, may even attach to his name the mystic symbols "C.E."

The registration and organisation of the various professions, in addition to proving a benefit to the relative members, would be of great value to the State in cases of emergency, such, for instance, as the present war. If the Government and fighting forces had been compelled to turn to other professional bodies in the same way as they were to the medical profession for technical personnel, it is safe to assume that fewer costly blunders would have been made, and so many glaring cases would not exist as they do now, in the fifth year of the war, of square pegs in round holes. Qualified and experienced architects and engineers would not be performing clerical duties or making tracings; reinforced concrete specialists would not be wasted on the erection of timber huts; while second-rate builders' foremen, or, perhaps, even worse, furniture dealers or picture palace managers would not be trying to supervise engineering and building operations.

INTERIOR CONSTRUCTION OF THE CONCRETE INDUSTRIAL HOUSE.*

By M. D. MORRILL.

In the consideration of the best interior construction for industrial houses, let us take, for example, those built and owned by a manufacturing or building company to be rented by the families of the employees.

These houses must be expected to stand hard service. They will be occupied by one family after another, and moving furniture is hard on the house interior. There will be some large families with several children, and many with three or four lodgers. Experience shows that some of these families will keep their houses spotlessly clean, while others will be indifferent as to dirt, insects, fire risks, and care of the house generally.

The interior of the industrial house should fulfil the following requirements:—

1. The rooms should be light and cheerful, free from dampness, warm in winter, and cool in summer.

2. Such a house interior should be free from dust-catching woodwork.

The surface and finish should be as waterproof as possible so that the house may be washed out, scrubbed and thoroughly cleaned between rentals.

3. In the construction, cracks, crevices, and concealed spaces should be avoided, as they are likely to harbour and offer a breeding place for vermin and insects.

4. The construction should be fire-resisting or, better, fireproof.

5. The construction should be reasonable in first cost, permanent and capable of resisting hard usage, with a minimum expense for upkeep and repair.

Let us consider three of the possible types of interior construction for industrial houses: (1) A house with masonry walls, the usual wood floor-beams, board floors, lath and plaster ceilings, wood stud partitions lathed and plastered; a non-fireproof construction. (2) A house with masonry walls, reinforced-concrete floor slab covered with wood sleepers and board floor, bearing partitions of concrete or tile; fireproof. (3) A house with a concrete floor and cement finish partitions concrete or tile.

The first type of construction is the least expensive in first cost, and has the advantage of being the kind to which we are all accustomed. An interior of this kind with wooden floors, door casings, base and window trim seems the most comfortable and homelike. We would like to stop here and forget that most disastrous fires gain their headway in the open spaces and dry timbers of these wooden floors. We would also like to forget that these concealed spaces in the partitions and floors form ideal breeding places for insects and vermin. A house interior of this construction can never be completely cleaned.

* A paper read before the American Concrete Institute.

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One untidy or careless tenant can ruin such a house. What is worse, through the neglect of proper precautions in case of tuberculosis, for instance, he might imperil the health of future tenants.

The second type of construction is an improvement over the first. The fire hazard is eliminated by the concrete floor slab. The wooden floors laid over the concrete give the house a familiar and home-like aspect. For the industrial house this type of construction has the disadvantage of being the most expensive.

The third type is a house with a concrete interior. Such a house can be made sanitary to a degree. There are no hidden spaces in the construction, therefore insects must live in the open if they live at all. On a trip of inspection to Nanticoke, Pa., the writer saw one of these concrete houses being scrubbed from top to bottom in preparation for a new tenant. After occupancy for many years these houses will be in good condition, and soap and water will make them fresh and clean again the same as it does to-day.

The house with a concrete interior has the further advantage of permanency and capacity to withstand hard usage. The expense of upkeep and repair therefore is reduced to a minimum, and depreciation becomes almost nil except on the doors, windows, plumbing fixtures, etc. Fire insurance becomes unnecessary, as there is little or nothing about such houses to burn.

On the other hand, there are objections to the house with the usual concrete interior. During the past five years the writer has had the opportunity to inspect in all 83 houses with concrete interiors. It may be of interest to note here this list:—

Twelve dwellings built under the Small-Harms patent in Paris, France.

Eight houses built under the Roughsledge system for the Canadian Cement Co., near Montreal, Canada.

Twenty dwellings at Gary, Ind., for American Steel and Wire Co.

Forty dwellings at Nanticoke, Pa., for the D.L. and W. R.R. Co.

One house at Brentwood, Md.

One house at Virginia Highlands, Va.

One house at Union Hill, N.J., built under Mr. Simpson's plan.

The interior appearance of the majority of these dwellings is crude and unfinished, while from a structural standpoint the superiority is very marked. The question therefore arises, How may the interior appearance of the concrete house be so improved as to make it more attractive and comfortable?

Let us look into the possible changes that might be made in the finishing of the interior of a concrete house, and see if some of the objections and faults cannot be overcome. We must remember that the art is new, and that most of the useful things about us were not in their first stages the beautiful articles that they are to-day. One error that some of us have heretofore made is in trying to produce such houses at too low a cost. In the interior treatment, just as in the exterior construction, we can afford to go to more expense than is usual in the ordinary house, for the building is for all time. It is almost an axiom that the permanent building is the low-cost building in the long run, and a concrete house with a concrete interior should, with a minimum of repairs, give service for a long period of years.

The cement floors have perhaps been considered as the greatest drawbacks in the fireproof house. There is no denying the fact that the cement floor without rugs or matting is a hard surface upon which to live; however, most of the modern hotels and office buildings, as well as the modern tenements, are now using cement floors, and no serious complaint is made after the tenant has become accustomed to them.

If the cement floor could be given a more attractive finish, prejudice against it might be overcome to some extent. Such floors might be finished with a terrazzo surface, and at a cost that is not excessive where machine grinding can be employed, or the floor may be finished with a surface of white Portland cement and marble dust. A floor of this sort can be waxed and polished much the same as a wooden floor. In some of Mr. Simpson's plans he proposes using a cove base of hard wood which is let in flush with the cement. This would serve as a tacking strip for carpets if such are desired.

The treatment of the interior walls of the concrete house does not differ materially from houses of other construction. For industrial houses it is generally conceded that painting is the most sanitary and satisfactory finish for the walls. The usual wood trim or casing around the windows and doors may be used, or, if desired, this can be altogether omitted, the plaster returned with a slightly rounded corner, making a simple and sanitary finish.

In the industrial house, built-in fixtures and cupboards should be bracketed from the walls where possible, as this leaves the floor space clear for ease in sweeping and cleaning. Curved corners where walls meet and at the base and ceiling help in cleaning also. In time the wash-tub, bath-tub, and kitchen sink for the industrial house will, without doubt, be moulded in concrete, but at the present stage of the art enamelled iron is a far better and less expensive material to use for these fixtures.

In the house with a concrete interior the stairs may be of the same material. The risers and treads can be precast and set in place. The stair railing can be made likewise. Where cost permits, decorative tile or precast panels may be set in the house walls; stencilling makes also an attractive way to apply simple decoration.

MR. S. S. PLATT'S RETIREMENT.

FORTY-SEVEN AND A-HALF YEARS' SERVICE.

The resignation by Mr. S. S. Platt as Borough Surveyor also came up on the General Purposes Committee's minutes at the Rochdale Borough Council Meeting, last Thursday, and led to a chorus of appreciation of his long and valued service to the town. A special resolution testifying to Mr. Platt's efficiency, and to his professional skill, so ungrudgingly placed at the disposal of the Corporation, was submitted and subsequently Mr. Platt was formally appointed as consulting engineer at £200 a year, and Mr. H. Yarwood as Surveyor at £400 per annum, Alderman Cunliffe explaining that both were temporary for the period of the war.

Alderman Cunliffe formally moved the resolution placing on record the Council's "high appreciation of the services of Mr. Platt as borough surveyor for a period of 37 years. During this long period of service Mr. Platt has been associated as engineer with many schemes for the public benefit, notably the construction of the Roch Mills Sewage Works, the covering of the river, and the laying of the Corporation tramways. The enthusiasm and devotion to the best interests of the town which have characterised his work, combined with his wide knowledge and extensive professional experience, command the admiration of the Council, and it is with feelings of deep regret that they find that his state of health compels him to retire from the Surveyorship."

Councillor Booth seconded in his own name as well as in that of Sir S. Turner, the chairman of the Paving and Sewering Committee, who was absent owing to a cold. He sketched the great work which Mr. Platt has done, particularly in connection with sewage disposal, main sewerage, and the laying out of the two portions of Falinge Park; and said that he might rest assured that his services were fully appreciated alike by the Council and the town. The resolution was adopted.

The Lord Primate has reopened the church of Manfieldstown in Kilsaran parish. The church has been closed for more than forty years, and was in a sad state of disrepair. The rector, the Rev. J. B. Leslie, did a quantity of restoration work with his own hands, aided by an expert mechanic, Mr. Christopher Clinton.

The Devon Education Committee has decided to form classes to try to revive cob making in Devon, which several members described as a lost art. Lord Portsmouth contended that houses built of cob were cheaper, while he knew houses of this character which must be six or seven hundred years old. Cob houses, he declared, were most comfortable places in which to live. The members said it was difficult to find a worker in cob-making now.

OBITUARY.

The sudden death is announced of Mr. E. W. Christmas, R.B.A., the Australian landscape painter. Mr. Christmas was born in Australia, spent most of his early youth in New Zealand, studied in England and abroad, and in 1909 was elected a member of the Royal Society of British Artists. He was an exhibitor at the Royal Academy, the Royal Institute of Water Colours, the Royal Institute of Oil Painters, the Royal Glasgow Institute, the Royal Society of British Artists, and other London and provincial galleries. In 1911 Mr. Christmas left England for Buenos Aires, completing, on his South American journey, nearly 200,000 miles of travel during ten years, and penetrating, in search of the picturesque, many parts of the world where few white men had preceded him. He reproduced on canvas the spot where stands the vast statue of "The Christ of the Andes." This picture won the Bronze Medal at the Panama Exposition, and will probably be brought to England with some of his Hawaii canvases. His work is represented in seven public collections in the Australian Commonwealth.

The Engineers' Club of Philadelphia learns with profound sorrow of the death, on June 27, 1918, of its beloved fellow-member and past president, Edgar Marburg. Edgar Marburg, a member of the club since October 21, 1893, was born in Shreveport, Louisiana, March 4, 1864. He was graduated from Rensselaer Polytechnic Institute, Troy, New York, in 1885, with degree of C.E. Later, upon the completion of the present engineering building of the University of Pennsylvania, he was honoured with the degree of Sc.D. Four years ago the degree of LL.D. was conferred on him by Franklin and Marshall College. In 1895 and 1896 Professor Marburg was elected one of the Directors of the Engineers' Club, and in 1900 was elected president. He was chairman of the Committee on Public Relations in 1912, a committee first appointed during that year; and from March 21, 1908, until his death was one of the trustees of the Bond Redemption Fund. Professor Edgar Marburg held the Chair of Civil Engineering in the University of Pennsylvania for twenty-six years, and, in conjunction with the late Professor Henry W. Spangler, deserves credit for having planned the present engineering laboratories at the university. He was secretary of the American Society of Testing Materials, a member of the American Society of Civil Engineers and the Society for Promoting Engineering Education. He contributed to various engineering journals, and was connected editorially with the *Engineering News-Record*. His most complete and important work was entitled "Framed Structures and Girders."

Plans have been prepared by Messrs. Graham and Hill, architects, of 6, Eldon Square, Newcastle-on-Tyne, for building a large number of houses at Blyth.

A meeting of over 200 members of the London Master Printers' Association last Thursday approved of a further large advance in wages to the members of the 15 printing trade unions in London. The London Costing Committee reported that this would require an addition of at least 15 per cent, to the present charges for all classes of printing, making a total increase since the war began of over 100 per cent., in addition to the greatly increased cost of paper and other materials. One more step towards making newspapers "luxuries," that only the huge capitalists will be able to produce, or the wealthy to buy!

A committee, with the Bishop of Winchester as chairman, has been formed, and an appeal is now being issued for funds to create a memorial to Canon Scott Holland. The committee appeal for the sum of at least £5,000 to be devoted to meeting the initial expenses of preparing for publication Dr. Scott Holland's unpublished writings; to completing the buildings of the Maurice Hostel at Hoxton, and to other purposes. Cheques may either be made payable to the Hon. Treasurer, Miss Eleanor Gregory, 33, Bedford Square, W.C.1, or sent direct to the London County and Westminster Bank, Limited, 109-11, New Oxford Street, W.C.1, a/c "Henry Scott Holland Memorial Fund."

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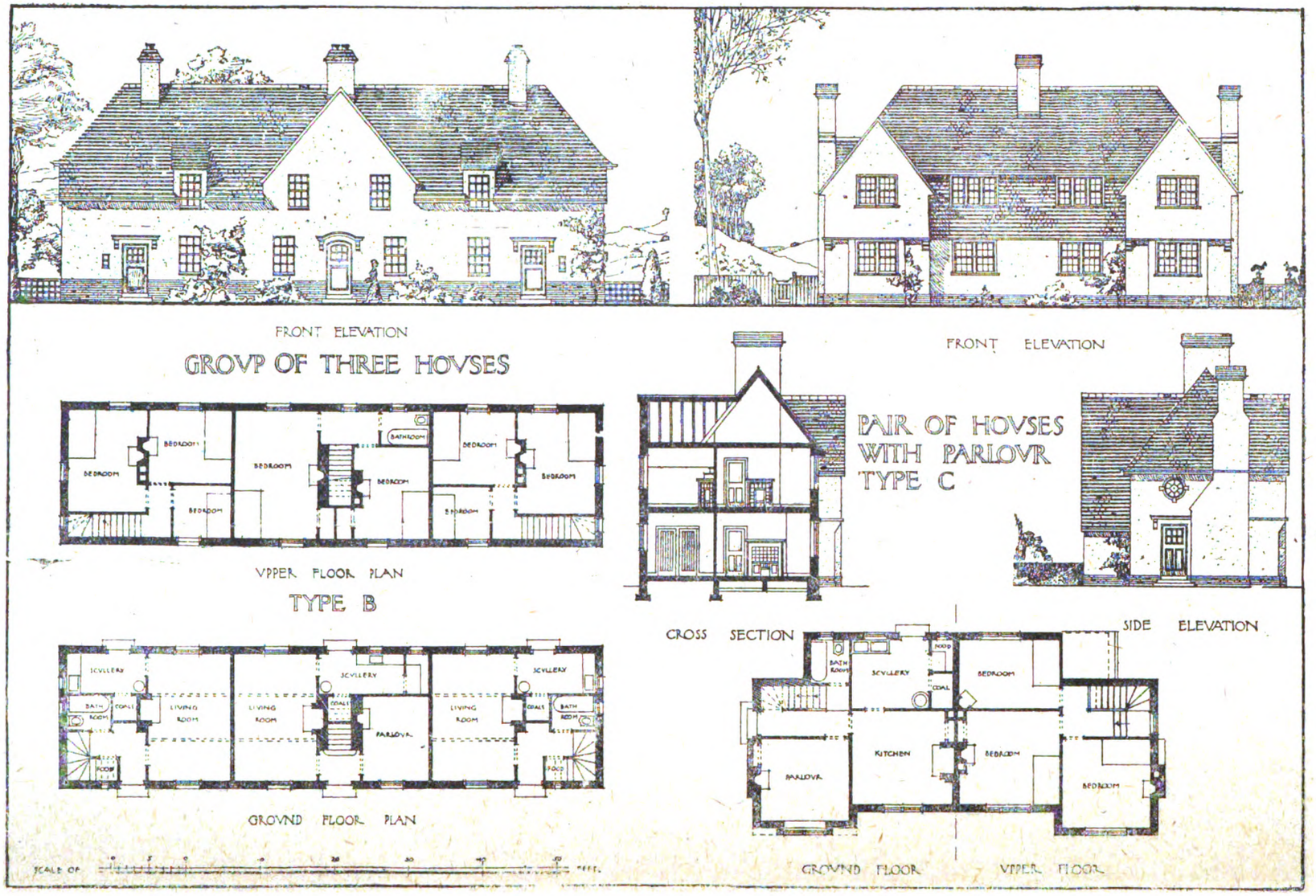

LOCAL GOVERNMENT BOARD FOR SCOTLAND.
HOUSES FOR THE WORKING CLASSES AFTER THE WAR.

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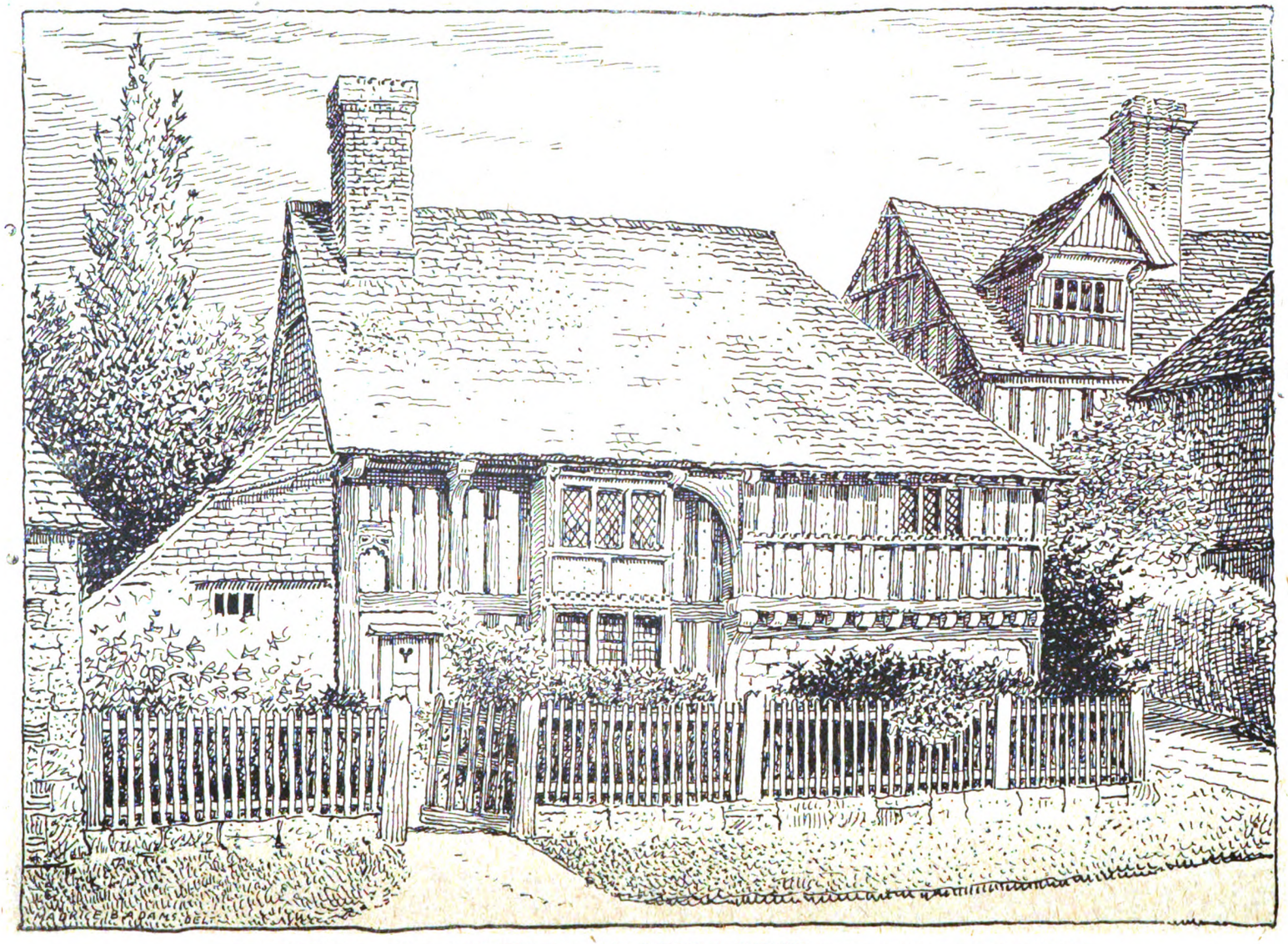

A TYPICAL OLD COTTAGE AT LEEDS, KENT. SKETCHED BY MAURICE B. ADAMS.

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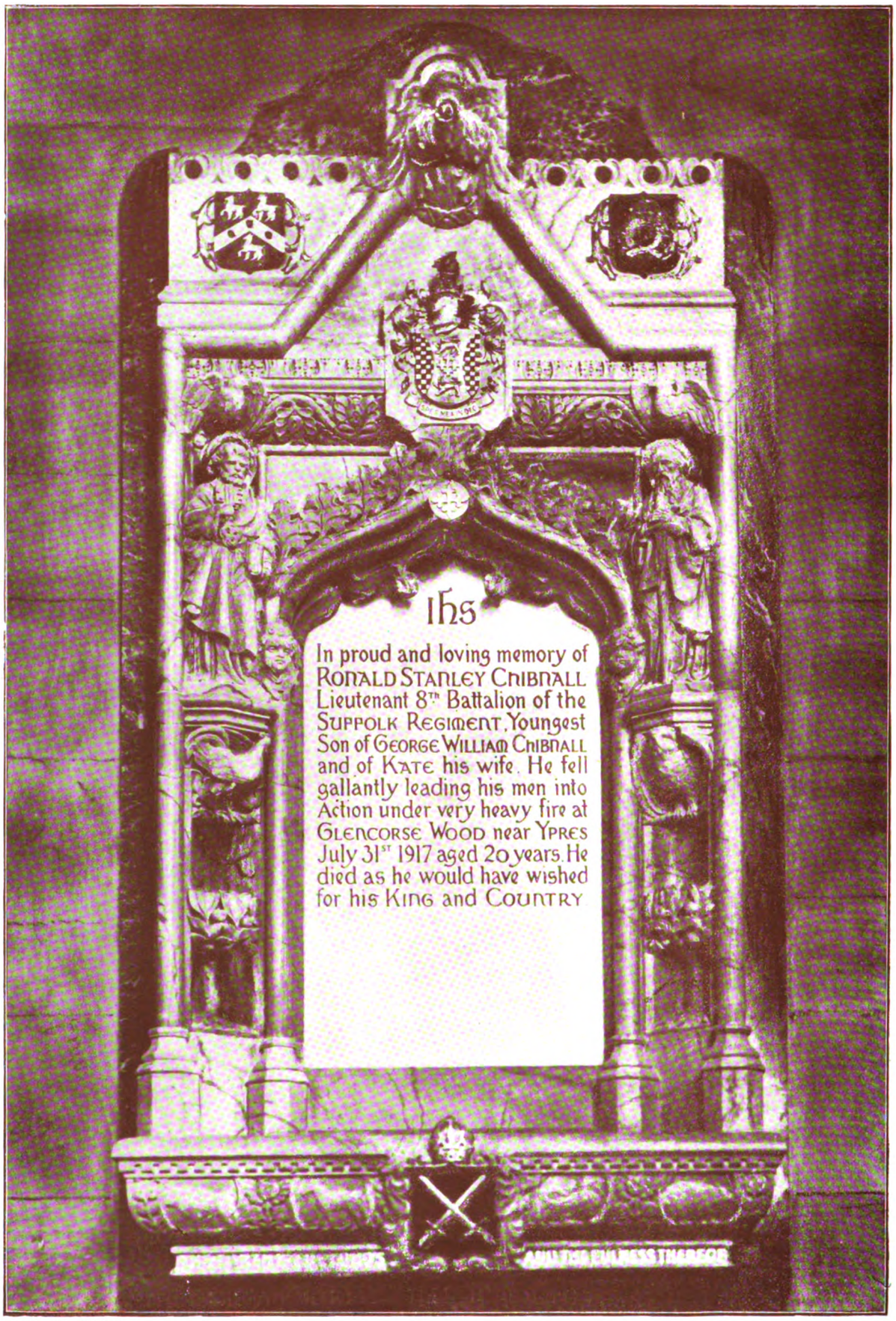
IHS
In proud and loving memory of
RONALD STANLEY CHIBNALL
Lieutenant 8th Battalion of the
SUFFOLK REGIMENT, Youngest
Son of GEORGE WILLIAM CHIBNALL
and of KATE his wife. He fell
gallantly leading his men into
Action under very heavy fire at
GLENCORSE WOOD near YPRES
July 31st 1917 aged 20 years. He
died as he would have wished
for his KING and COUNTRY

H. Lunt, Photo.]

THE CHIBNALL MEMORIAL, HAMMERSMITH PARISH CHURCH.

Mr. MAURICE B. ADAMS, F.R.I.B.A., Architect.

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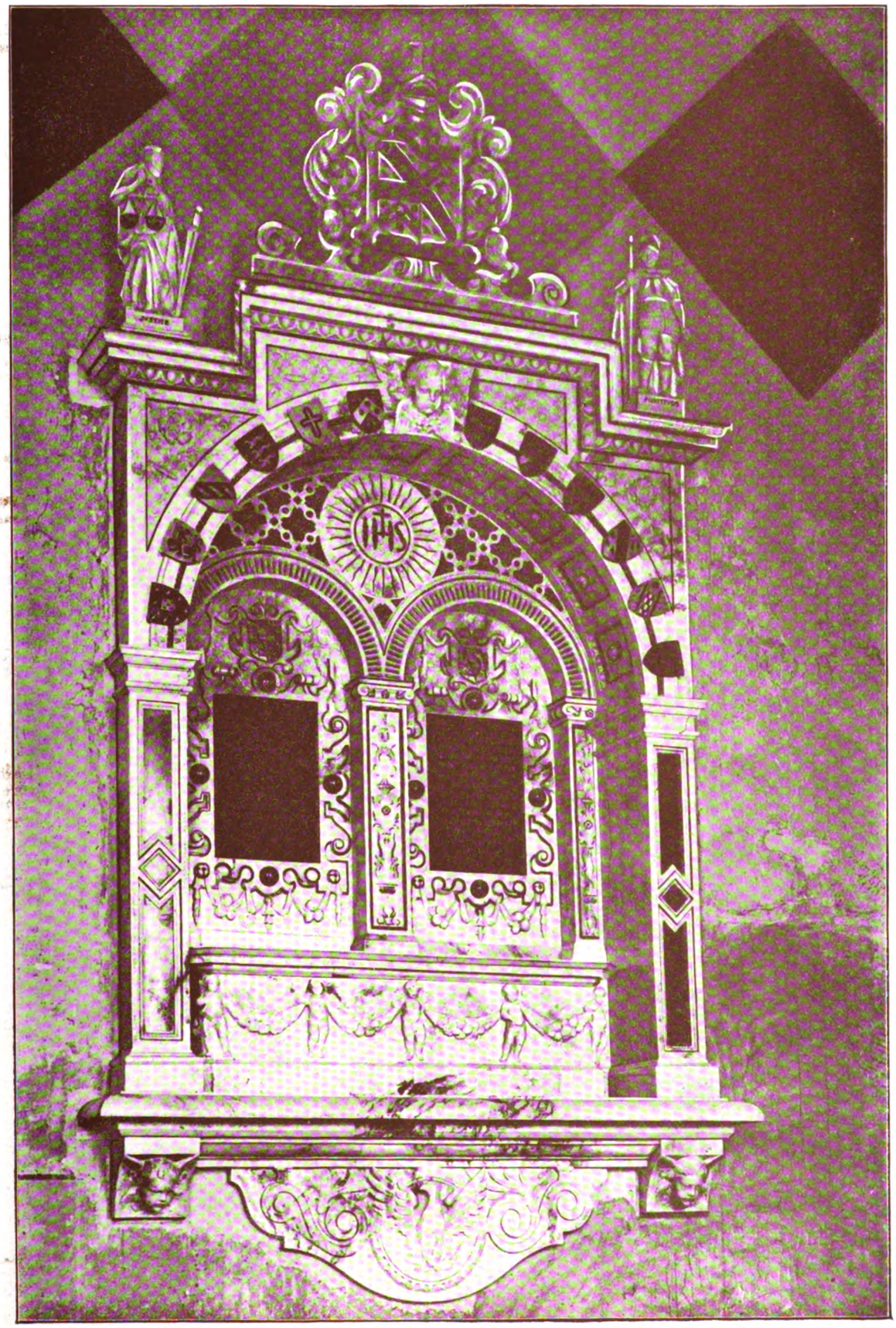

A. H. Poppleton ,Photo.]

THE TEMPEST MEMORIAL, TONG CHURCH, BRADFORD

Mr. Frank L. Pearson, F.R.I.B.A., Architect.

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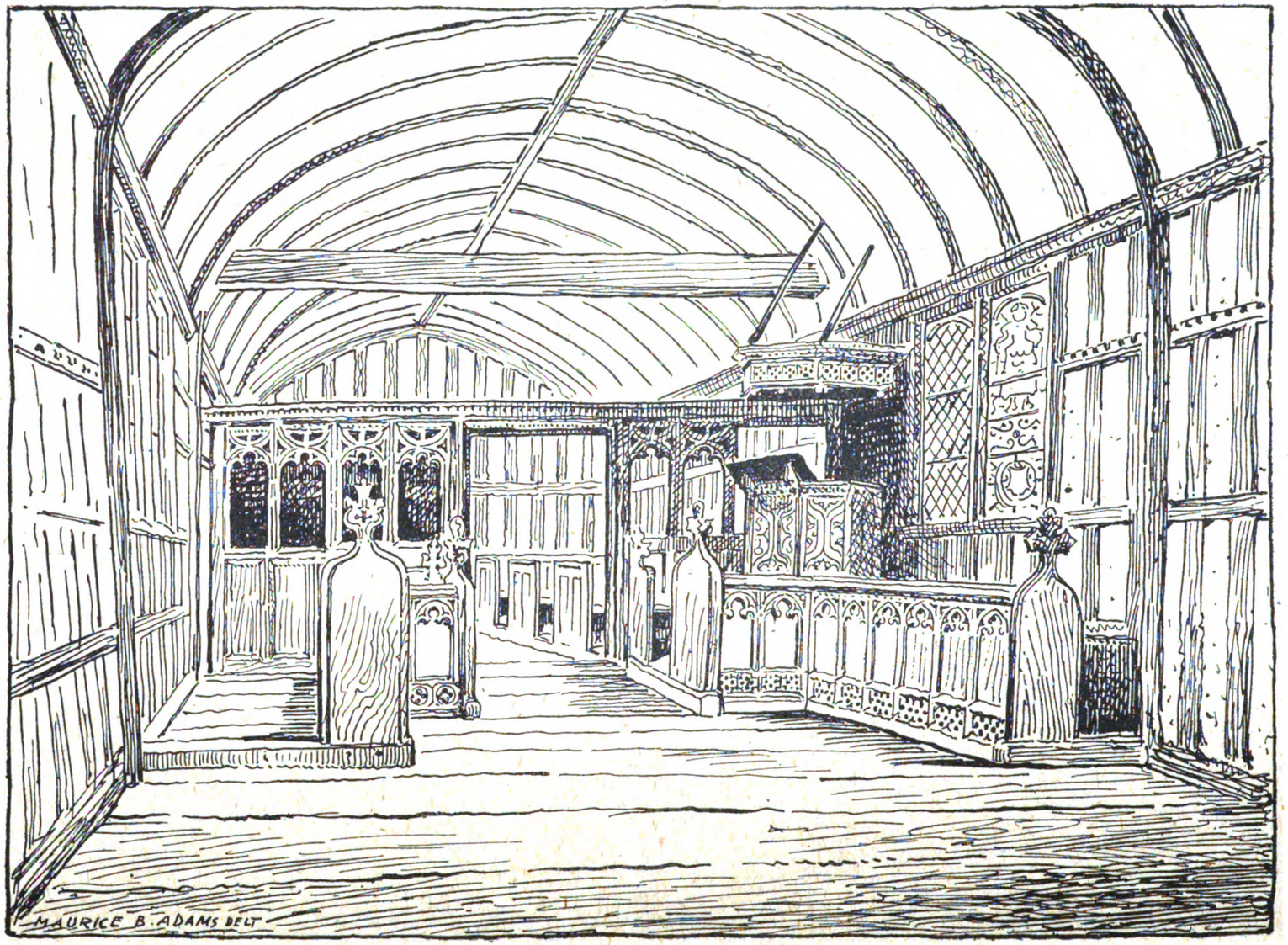

THE CHAPEL, ICHTHAM-MOTE, KENT. SKETCHED BY MAURICE B. ADAMS.

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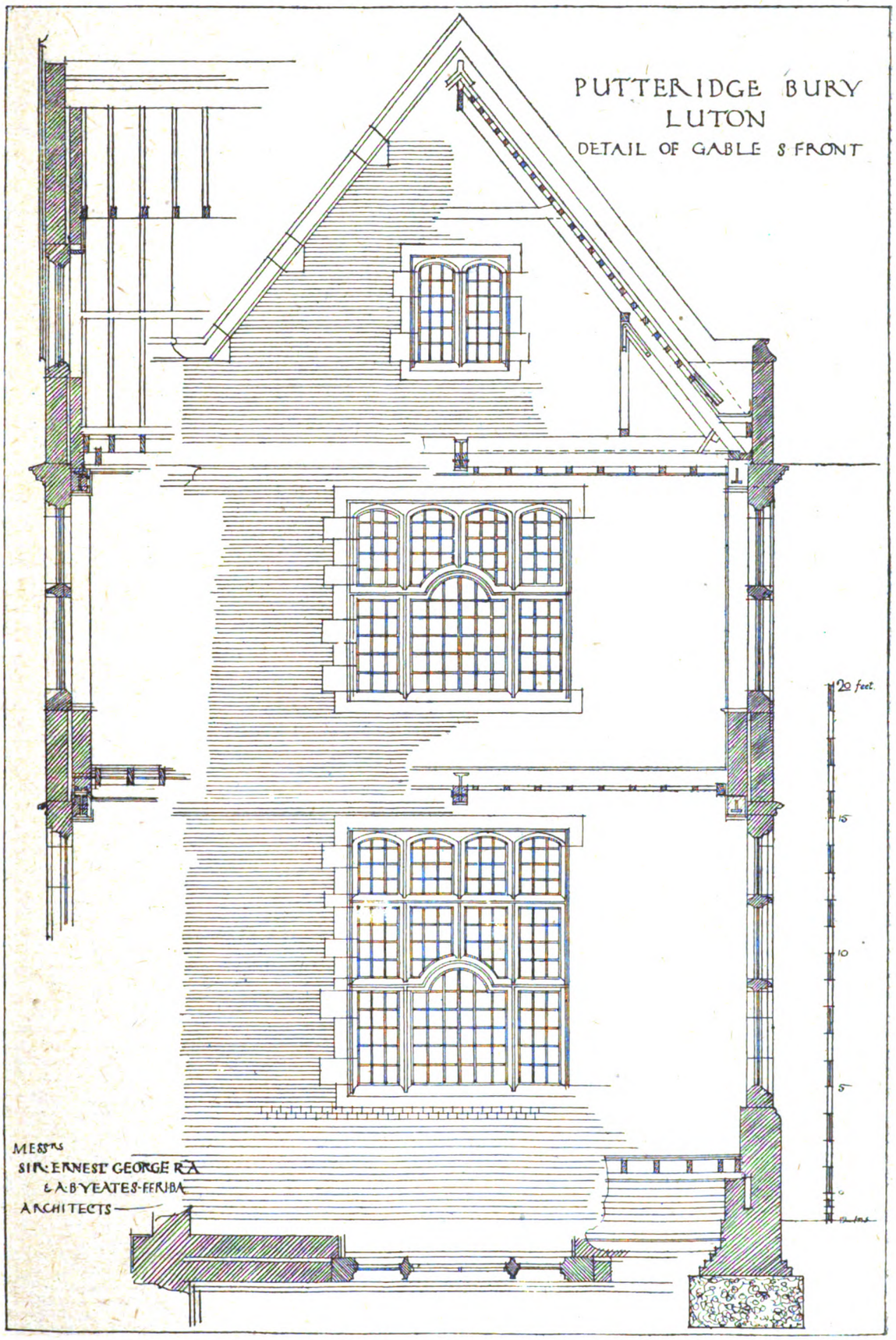

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Our Illustrations.

THE CHIBNALL MEMORIAL, HAMMERSMITH PARISH CHURCH.

This mural monument has just been erected in the morning chapel of St. Paul's Municipal Parish Church, in the Broadway at Hammersmith, by Mr. G. W. Chibnall, of Chiswick Mall, to the memory of his youngest son, Lieut. Ronald S. Chibnall, who was killed on July 31, 1917, while gallantly leading his men of the Suffolk Regiment at Glencorse Wood, near Ypres. The tablet is about six feet high and is executed in Gallio antico, a rich, hard, yellow marble from Africa. The inscription panel is in statuary, with dead black incised lettering. The shaped surround, forming a setting on the stone ashlar walling, is of polished green Genoa marble as a verge. The Angel of the Resurrection is placed on the apex. Full-length figures of SS. Peter and Paul flank the composition. The cock below St. Peter is emblematic of "Morning," and the owl, representative of "Wisdom," is indicative also of "Night," and forms the corbel below St. Paul, the Patron Saint of the Parish. The cock is also associated with the life of St. Peter. At the base in the centre is carved the arms of the Diocese of London, with the crossed swords, as in St. Paul's Cathedral. Along the bottom of the design is carved the text, "The earth is the Lord's and the fullness thereof," with cameo reliefs, right and left, of wild and domestic beasts, also trees and the birds intended to suggest the earth, whereon not even a sparrow falls without the knowledge of the Creator. The family arms, the crest of St. Paul's School, and his army badge are carved in the upper portion of the monument. These are coloured in proper heraldic tintings, relieved with gold and silver tinctures. The projection of the deepest part of the work is from nine to ten inches from the wall face, though the photograph taken as a full front view does not show this. The projection is, however, important, because the tablet, being fixed in the sanctuary of the chapel on the north side of the apse, is necessarily seen for the most part in perspective. The execution of the monument was entrusted to Messrs. Farmer and Brindley, the work being carried out to the full-size details by the architect, Mr. Maurice B. Adams, F.R.I.B.A., who also drew out the lettering.

THE TEMPEST MEMORIAL, TONG CHURCH, BRADFORD.

The memorial is placed to commemorate the last two baronets, Sir Robert Tempest Tempest, who died in 1901, and his son, Sir Tristram Tempest Tempest, who died in 1909. It is in the chancel of Tong Church, on the north side of the altar, and is constructed of alabaster and coloured marbles, and further decorated with paint and gilding. The family, an old Yorkshire one, descends from Sir Richard Tempest, Knight of Bracewell and Bolling, who died in 1537, and whose son Henry married Ellen, daughter and heir to Christopher Mirfield, of Tong. The various shields on the monument, of which there are fifteen in all, bear the arms of the different families allied to the Tempests. Early in the nineteenth century the property passed to the Ricketts family through the marriage of Henrietta Plumbe Tempest with Admiral Sir Cornwallis Ricketts, Bart. Their son Robert, to whom this memorial is erected, took the name of Tempest, and his son Tristram was the last baronet. The large shield at the top, flanked by the figures of Justice and Fortitude, bears the arms of Tempest and Ricketts quarterly, and the shields round the arch those of the allied families. The whole was executed by Mr. Nathaniel Hitch, of Vauxhall, from the design and under the supervision of Mr. Frank L. Pearson, the architect.

INTERIOR OF THE CHAPEL, IGHTHAM MOTE, KENT.

This well-known and beautiful Old English house is of three periods, dating from the time of Henry II., with portions erected during the time of Henry VII. and Henry VIII., followed by additions carried out in the days of Elizabeth. The most remarkable part of the Edwardian period still remaining is the hall, which has features corresponding to the hall in the palace at Mayfield, in Sussex. The chapel is situate over the groined room overlooking the moat, and which has cinquefoiled cusping to the square-headed windows. The chapel has remains of a three-light window, together with a cinquefoiled niche and a good doorway. The tower over the gateway and the whole of the premises on that front were carried out in the days of Henry VIII., including the chapel, which, as indicated already, is upstairs, with its wooden barrel-vaulted ceiling, retaining also some original paintings, with numerous badges of "Bluff Hal" and his Queen, Katharine of Aragon. The pewing, pulpit, and benches are unaltered, with their poppy-heads to the stall-ends all unrestored, and the whole making one of the most perfect domestic chapels of that period in existence, the pulpit, with its tester, being the latest in point of detail. The screen greatly enhances the picturesqueness of the interior. Mr. Norman Shaw, R.A., many years ago added some minor alterations to the hall and other rooms of the house, which contained an example of very early wall-papers as well as many fine pieces of historic furniture. In the BUILDING NEWS for August 6, 1886, a series of pen-and-ink views of the exterior of Ightham Mote were published from drawings by Mr. Maurice B. Adams, also a sheet of details of the staircase to a large scale.

A TYPICAL KENTISH TIMBER COTTAGE AT LEEDS.

The quaint old village of Leeds in Kent, with its interesting church, contains several half-timbered cottages of charming character, and the one of which a sketch appears herewith is perhaps the most distinctive. The dormer and gable shown to the right belongs to another example up the lane, and known as the old mill. The village is overtopped by the importance of Leeds Castle, some little distance away, and less of a water-bound fortress than a domestic mansion house. It is located on an island approached by a stone bridge. A few years since Mr. Frank L. Pearson, F.R.I.B.A., very largely added to the surroundings, and enriched the building with much beautiful work in the interior.

LOCAL GOVERNMENT BOARD FOR SCOTLAND: HOUSES FOR THE WORKING CLASSES AFTER THE WAR.

Last week we gave the drawings of the houses designed and built by the Office of Works at Edinburgh for the working classes, the types so shown being A, D, E, and F. To-day we complete the series by grouping on a further sheet the types marked B and C. Type B shows a group of three houses designed with "through" living-room for use on north frontages. This plan involves a wide frontage, but is a type which will be found essential on most schemes. The entrance to the bathroom in the end house is from the entrance passage, and it will be noted that in this position the supply of hot water from the boiler of the living-room fireplace is obtained. This factor has determined the position of the living-room fireplace, which otherwise would have been better placed on the wall opposite the door. Its present position between the two doors does not conduce to comfort in the sitting space round the fire, and tends to interfere with the traffic between the front door and the scullery. The size of the third bedroom on this plan is rather small. The wallhead at the back wall is kept up the full height, and thus enables square ceilings to be provided for most of the bedrooms. The plan of the intermediate house illustrates an arrangement by which two of the apartments are provided on the ground floor; one of these can be conveniently used either as a parlour or bedroom. The provision of the bathroom on the upper floor is more expensive than if it had been provided on the ground floor, as additional length of piping is required. Houses of this type have been erected at Gourock and at various sites in Lanarkshire. Type C shows a pair of houses with a parlour in addition to the living-room and three bedrooms. The bathroom is at the foot of the stair. Houses of this type have been erected at Gourock. A Housing After the War Scottish Competition has been decided on by the Treasury, as announced in our pages for August 28. The contest is to be open to any British subject, and the competition will be divided into three sections. Prizes are offered to the value of £725 by way of premiums for the most meritorious designs.

PUTTERIDGE BURY, LUTON, BEDFORDSHIRE.

The ground plan and main elevations of this country house, designed by Sir Ernest George, R.A., and Mr. A. B. Yeates, FF.R.I.B.A., were illustrated from the architects' working drawings in our issue for August 28. To-day we give a detail of the right-hand gable rising over the boudoir at the east end of the south front, next the hall bay. Other details of the building will follow. Messrs. Holland and Hannen were the contractors, the work being carried out for Mr. T. M. Clutterbuck on a fine site four miles from Luton.

Correspondence.

GOVERNMENT BUILDING CONTRACTS.

To the Editor of THE BUILDING NEWS.

Sir,—The letter from five Fellows of the Surveyor's Institution in *The Times* of yesterday is a weighty reminder of the slackness that has entered so largely into our methods of work and organisation. The principle of competition which brings out the best both as regards quality and quantity has been very largely discarded, and in place of this we have a system of payment by percentages on cost of materials and labour irrespective of whether there has been judgment in the purchase of the one or skill in the exercise of the other.

The five Fellows of the Surveyors' Institution rightly "regard this system as dangerous and wasteful, as under it there is no incentive on the part of the contractor to exercise any check upon the quantity or quality of the labour expended nor to regulate the salaries and wages paid. Moreover, all mistakes made by the contractor are paid for, and the whole conduct of the work tends to become lavish and careless. The case scarcely bears arguing, so often and so clearly has it been proved that the cost system invariably results in increased expenditure. It was fully discussed and condemned in public at the time when the L.C.C. dissolved its Works Department. Yet here is the evil magnified a hundredfold. Instances can be cited in which similar undertakings carried out under similar conditions have, under the cost system, involved double the expenditure paid under contract system."

The question is of very vital importance to the welfare of our country, and unless the spirit of competition be revived in business and industry reconstruction after the war will be like attempting to make bricks without straw.—We are, yours faithfully,

TWO ARCHITECTS.

7, Pall Mall, S.W.1, September 5, 1918.

The strike of Dublin builders' employees, numbering 17,000, including 6,000 aerodrome workers, was settled last week. The men demanded an increase of 3 1-20d. per hour, but have accepted 1 1-20d. They were idle for two weeks.

The surveyor of Ware, Herts, has informed the urban council that he had received a Government form relating to after-war reconstruction that contained over 500 questions to answer. A foretaste of what is coming to all of us when the total change is made from constitutional government to bureaucracy!

In the winding up under the Trading with the Enemy Amendment Act, 1918, of the business of M. Bondi, 31, Creechurch Lane, E.C.3, bristle merchant, successor of Neumann Brothers, of the same address, bristle merchants, it is announced in the *Gazette* that Henry Douglas Woolger, Moorfield Chambers, 95 and 97, Finsbury Pavement, E.C.2, was appointed controller on September 2, in place of Alfred Henry Knight, resigned.

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LEGAL INTELLIGENCE.

COUNTY COUNCIL AND DAMAGE TO MAIN ROADS.—At Bangor County Court last week, Judge Bryn Roberts delivered judgment in a case in which the Carnarvonshire County Council sued Messrs. Green and Co., timber merchants, Conway Valley, for damages amounting to £160 alleged to have been done to main roads in the county by extraordinary traffic in connection with the defendants' business in the county. The case was heard in full by the late Judge Moss, who died before delivering judgment, and the parties agreed that Judge Bryn Roberts should decide the case on Judge Moss's notes, plus statements by the solicitors on each side. Judge Bryn Roberts heard these at the last court, and reserved judgment. His Honour said last week he had come to the conclusion that there was extraordinary traffic, exceptional in amount and concentrated during a comparatively short period, and that this had caused a substantial increase in the burden cast on the road, which had caused increase in the cost of upkeep. He gave judgment for the plaintiffs for £120 and costs.

FAILURE TO SUBMIT PLANS OF SINGLE APARTMENT HOUSES.—The Edinburgh Justiciary Appeal Court has reversed a decision of the sheriff in the case of the Western District Committee of Dumbarton County Council v. Brown. The defendant was summoned for having converted one house into a number of single apartment houses, without submitting plans, "he being a person who intended to erect a house or building." The Sheriff did not convict, and the County Council lodged an appeal. In giving judgment, the Lord Justice-General said that on the facts found by the Sheriff it seemed clear that the respondent had committed the offence preferred against him in the complaint. Confessedly, the respondent did not obtain the leave of the Local Authority or lodge plans. It was said that he was not bound to do so in respect that these single houses were single apartment houses, and involved no structural alterations upon the principal house in order to bring them into existence. The statute did not contemplate structural alterations being made. It might be that structural alterations were necessary; it might be that they might be unnecessary, but one could well see the absolute need for the submission of plans to and the consent being obtained of the Local Authority even where no structural alterations were effected; but separate occupancies were carved out of one single occupancy so as to create a number of separate houses. The case would be remitted back for conviction, with ten guineas expenses.

THE BRICK CONTROL.—At the Mansion House last Wednesday, before Alderman Sir John Bell, Stone and Co., Ltd., Ironmonger Lane, were ordered to pay £50 and 15 guinea costs on a summons for having failed to comply with the provisions of the Building Bricks Order, 1918, in selling to Mr. J. W. Sergeant 20,000 building bricks otherwise than in the terms of a permit issued under the authority of the Minister of Munitions. Mr. J. W. Sergeant, Kingston-on-Thames, was fined £50 and 15 guineas costs for aiding and abetting. According to the report in the *Times*, Sir Archibald Bodkin, prosecuting, said Messrs. Dick, Kerr, and Co., Ltd., were constructing some public works in Surrey, and on April 24 they telephoned to Mr. Sergeant for 20,000 bricks. Mr. Sergeant offered them at 75s. per thousand. Mr. Sergeant had not got the bricks on April 24, but he communicated with Messrs. Stone and Co., brickmakers, and got them to deliver the bricks to his customer. Afterwards applications were made to the Controller by Mr. Sergeant and Messrs. Stone and Co. for permits, and ultimately the Controller sent a permit to Stone and Co. to sell 40,000 bricks at a provisional price of 35s. per thousand, he being under the impression that the transaction had not been carried out. Sir Archibald Bodkin remarked that the case was an excellent example of the mischief the controlling order was intended to prevent. Sir John Bell: And which I am afraid it does not. Sir Archibald Bodkin: It would if the permit were asked for first. Sir John Bell said there was a letter in the *Times* that morning which exposed the whole thing. It did not matter to a contractor how much he paid for material or labour as he was paid by commission upon the cost price. The higher the cost price the more the contractor got, and the British taxpayer had to pay. It was pointed out by a representative of Messrs. Dick, Kerr, and Co. that Sir John Bell's remarks did not apply to them. They were constructing the building for the Ministry of Munitions at a total cost of 2½ per cent., and had submitted the prices to the Ministry before a contract was entered into. In the circumstances 75s. per thousand was a fair price for these bricks.

Our Office Table.

In a discussion before the Boston Society of Civil Engineers, Mr. F. S. Bailey described experiments he had made to ascertain the most economical mixture of cement, sand, and aggregate. The principal tests made were: The comparative costs, per 100,000 lb. compressive strength, of different mixes with three kinds of aggregate, namely, hard sandstone, broken stone and gravel, and the comparative costs with different mixes with beams or slab of different depths. All these experiments, with one exception, show that a mix of 1:2:4 would be the most economical. Mr. Bartis S. Brown said that in his practice he always tried several depths of beam experimentally to make sure of getting the most economical beam for each different "lay out," and that in one design he had saved $50,000 by so doing.

Professor J. Walter Fewkes, who for years has been connected with the development of the cliff ruins in Colorado and Utah, has issued a pamphlet through the Smithsonian Institution on the various forms of towers found in the cliff ruins of south-western Colorado and south-eastern Utah. Professor Fewkes finds that, in general, there are five classes of towers constructed by that race. Presumably, the cliff dwellers developed their buildings, as have other races, from the simple to the complex. The simplest forms are the plain round towers which are often found among the ruins. These towers are characteristic of all cliff ruins, their masonry being excellent. They vary in size and height, some of them being three stories high. The best examples of the round tower, according to Mr. Fewkes, are to be found in the Hovenweep district, Utah, where the buildings are in a remarkable state of preservation.

To the members of the St. Andrew Society (Glasgow) who, accompanied by a number of overseas soldiers as guests, visited the historic Abbey of Paisley, Mr. P. M'Gregor Chalmers, architect of the extensive restoration, delivered a lecture on the Abbey since it was founded in 1163. Thereafter he took the company round the almost completed choir, and pointed out some of the features of the building. He explained that the springers for the roof were already in the walls and when completed it would be the largest vaulted roof in Scotland, measuring 120 feet by 32 feet. The life of Christ would be depicted on the carved bosses. Outside the niches would be occupied by statues, beginning with the Walter the High Steward, and his wife, followed by other Stewarts, and finishing with King George V. and Queen Mary.

Jordans, the Friends' centre in Buckinghamshire, is to have a model village. An estate of about 100 acres has been bought, and it is proposed, as soon as circumstances allow, to lay it out as a model village to be known as "Jordans Village." The promoters of the scheme, who include Mr. Fred Rowntree and Mr. Douglas Rowntree, do not intend to sell any portion of the estate, but to let plots, on which will be built cottages with ample accommodation for market gardening, bee-keeping, poultry-keeping, and village industries. A number of tenants have provisionally taken plots, and it is intended to begin the felling of timber and the planting of fruit trees in the autumn.

Scottish health problems were considered at the 44th annual Conference of the Incorporated Sanitary Association, which was opened in Stirling last Thursday. Mr. John Frew, Sanitary Inspector, Linlithgowshire, in his presidential address, alluded to the question of the appointment of a Ministry of Health. His own opinion, he said, was that it would be better for the country if they were to make full use of the powers they already had. The Local Government Act of 1889 and the Burgh Police and other Acts dealt directly with the actual life of the people, and if rigorously and wisely enforced would do more for the health of the people than any Minister of Health could ever do.' With four dissentients, the Congress adopted a resolution to the effect that the Local Government Board should be established as the Department of Public Health for Scotland, with the Secretary for Scotland as Minister of Health and a Parliamentary Secretary in subordinate charge.

Capt. Scharroo, of the Military School of Engineers in Holland, has contributed to a Dutch magazine a very interesting article relating to the waterproofing of Portland Cement with "Pudlo." After giving a brief explanation of the various methods of waterproofing cement, he states that he found both liquids and powders generally affected the cement adversely. He was therefore very sceptical about the outcome of his experiments with the powder "Pudlo." The results, however, were so successful and surprising that in the interests of the Dutch building trade he decided to publish the results. Reference is made to some tensile and compression tests made with Pudloed concrete by Messrs. Koning and Bienfait, the Dutch cement experts, and from these Capt. Scharroo's experiments are confirmed that "Pudlo" makes cement perfectly impervious without detrimentally affecting the cement. He urges the use of Pudloed cement in the construction of concrete ships. The Dutch agent for Messrs. Kerner-Greenwood and Co., Ltd., of King's Lynn, the makers of "Pudlo," states that Capt. Scharroo is a well-known expert on cement, and that the publication of his experiments in the Dutch technical paper *Gowapend Beton* is causing many inquiries from other authorities.

A year ago the Metropolitan Water Board had to meet some six months' bills which had been placed in this market, and conditions were so unfavourable that the unusual procedure was adopted of appealing to the New York money market, which provided the money for twelve months. The bills will mature on September 18, and they are not to be renewed. Financial conditions have improved so materially that the Board can once more finance their floating debt in London, and tenders have been received at the Bank of England for £1,300,000 of twelve months' bills, to take the place of the American issue.

Already, says *Timber*, and we ourselves know it is the case, its correspondents throughout the country are almost unanimous as to the difficulties which will arise and the delays which will take place in the execution of national work if the merchants with mills and establishments are not treated more liberally. It is all very well to say that home-grown wood is not rationed, and must be made to take the place of imported timber. When there is no imported wood in the country, home-grown will, of course, have to be substituted, but as long as there is a stock of imported wood there will be a keen demand, and preference will, for most purposes, be given to the foreign article. The importer with a ration will, therefore, get the business, and if he has no mill himself, he will have to arrange for the work of conversion, etc., when this is required, to be performed by the sawmiller. But sawmillers accustomed to a profit on the sale of the wood, as well as to a profit on the work, will not be able to exist on these conditions, and there is therefore foreshadowed under the scheme, as now being administered, a closing down of many mills and small businesses, to the great detriment of the country's industries.

Littleton Park, Shepperton, Middlesex, for many years the home of the late Sir Richard Burbidge, recently sold, was built from the direct inspiration of Sir Christopher Wren, if not actually from his plans. Littleton House exhibits much of the quiet dignity of Kensington Palace and Hampton Court. Littleton Park was then the estate of the Wood family, and King William III. was a frequent visitor to the beautiful Lady Caroline Wood during her residence there. A picturesque old summer-house, still standing in the park, was a favourite resting-place of the monarch, and a memorial urn erected by Lady Caroline still commemorates his visits. The mansion was partly destroyed by fire in 1876, but Sir Richard Burbidge, who purchased and rebuilt it, retained much of the old house,

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and preserved its characteristics. It has a very fine galleried hall, extending almost the whole length of the house, and its fifty-two rooms include a panelled "white room," a "walnut room," fitted with carved wood that once adorned Walsingham House, and a drawing-room looking out on to a winter garden and conservatory. In the park a Japanese pavilion borders on the ornamental lake, the backwaters of which contain seven islands, one of them extending to eleven acres. There are over 900 acres of arable and pasture land and woods.

An interesting suggestion was made during a discussion at the recent convention of the American Concrete Institute for the prevention of seepage under pavements. A study was made of the frost action on pavements, and it was found that any deflection of over seven-sixteenths of an inch in 32 ft. of width would produce cracks. To avoid this it was proposed that sheets of bituminous material three-eighths of an inch thick and running from the top of the curb to a depth of four feet below the bottom of the concrete base would prevent the accumulation of moisture under the pavement and render it proof against frost action. The investigations have not been completed; they are being conducted at Kenilworth, Ill., by Prof. William H. Burger, of the Northwestern University, and also at Winnetka, Ill.

Second Lieutenant Herbert Frankland Backhouse, Middlesex Regiment, killed on August 25, aged twenty-two, was the son of Mr. James C. Backhouse ("Edmund Dane"), and Mrs. Backhouse, London. He was educated at the Fielden School, Manchester, and Camden School of Art, and was a sculptor of much promise.

England is already planning to reclaim the deserts of Mesopotamia by irrigation on so large a scale as to dwarf everything of the kind hitherto conceived. When the project is completed half the present population of the British Isles could be supported on the reclaimed lands. The work will involve extensive harbour development and railway construction.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

MANCHESTER.—For supplies, etc., for the Corporation. Accepted tenders:—

Paving, etc., Committee: Oats, Edge, J., 241, Bury New Road, and Stott, A. and G. B., Oak Street, Manchester; limestone chippings, Buxton Lime Firms Co., Ltd., 79, Piccadilly, Manchester; slag chippings, Stiff, C. L., and Co., Ltd., Irlam; granite macadam and chippings, Penmaenmawr and Welsh Granite Co., Ltd., Penmaenmawr; galvanised malleable iron step irons, Turner, W. (Ardwick), Ltd., 127 and 129, Fairfield Street, Manchester. Gas Committee: Normanton, C. H., and Son, Ltd., Manchester, for erection of a messroom and lavatories at Gaythorn Station. Small Holdings and Allotments Committee: Fenton, A., for fencing of allotments in Pink Bank Lane, Crowcroft, Green Street, Ladybarn, and Hawthorn Road, Chorlton-cum-Hardy.

NUNEATON.—For supply of cast-iron pipes and specials, for the Town Council:—

Stanton Ironworks Co., Ltd., £13 10s. and £21 per ton respectively (accepted).

STROOD (KENT).—For painting external wood and iron work at the Guardians' institution at Strood, for the Guardians of Strood Union:—

Parks, W. J., Ltd., 73, High Street, Rochester £249 0 0

(Accepted.)

LIST OF TENDERS OPEN.

BUILDINGS.

Sept. 16.—Erection of a new pavilion at Tehidy Sanatorium.—For the Tuberculosis Committee of the Cornwall County Council.—Plans and specifications to be seen by appointment at Tehidy. Forms of tender and particulars from E. H. Crispin, architect, County Hall, Truro. Tenders to the Clerk to the Council, County Hall, Truro.

PAINTING.

Sept. 16.—Painting the East Gorton branch library.—For the Libraries Committee.—Specifications from the City Architect, Town Hall, upon payment of 10s. 6d., which will be returned on receipt of a bona-fide tender. Tenders to the City Architect's Office.

Sept. 16.—Painting and decorating the convalescent wards at the isolation hospital, Swindon.—For the Swindon and District Hospital Board.—Particulars from the Matron. Tenders to J. McGregor Johnson, Clerk, 7, Westlecot Road, Swindon.

SANITARY.

Sept. 25.—Sewer extension of about 500 yards of 9-in. pipe sewer, manholes, etc., at Coulsdon.—For the Coulsdon and Purley Urban District Council.—E. J. Gowen, Clerk, Council Offices, Purley.

New offices are to be erected at Brigg for the Great Central Railway Company.

At a recent meeting of the Infirmary Old Site Committee it was decided to make a peremptory demand of the chairman of the Art Gallery and Libraries Committees for the reports asked for on January 26 last, stating the area required for the erection of a new art gallery and a new reference library respectively, in time for a special meeting of the Infirmary Old Site Committee on September 24.

The effect of scale or corrosion on the carrying capacity of a main is exceedingly pernicious. It is recorded that in the case of a 24-in. main the pumping pressure, before cleaning, was 125 lb., while the pressure in the city averaged only about 30 lb. After cleaning, the pressure at the pumping station was 90 lb., and the pressure in the city was better than 40 lb. The cleaning of water mains results in the restoration of a smooth inner surface, and the original diameter of the pipe, and this is of great importance, especially where the provision of an efficient supply of water for fire-extinguishing purposes is concerned.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

Australia House, Strand, W.C. View looking east, from the Royal Academy, showing the south front, St. Clement Danes Church and the Law Courts, and detail of main entrance. Dr. A. Marshall Mackenzie, R.S.A. (Messrs. Marshall Mackenzie and A. C. R. Mackenzie, FF.R.I.B.A.), Architect.
Messrs. Martins' New Shop, 17, Coventry Street, Haymarket.
Historic Examples of Domestic Stonework, Rockingham Castle, Northamptonshire, seventeenth century building, and an old house at Somerton, Somersetshire. Sketched by Mr. Maurice B. Adams, F.R.I.B.A.
Billiard Room details, Crathorne Hall, Yorkshire. Messrs. Sir Ernest George, R.A., and A. B. Yeates, FF.R.I.B.A., Architects.

Currente Calamo.

It seems doubtful if the Ministry of Health Bill will be passed by this Parliament. Mr. P. Rockliff, chairman of the London Insurance Committee, speaking last Saturday at Stroud at the annual conference of the National Union of Holloway Friendly Societies, said that some time ago Dr. Addison reported an agreement in regard to the proposed Ministry of Health; but no such agreement now existed, as the Home Affairs Committee, to whom the Bill had been referred by the War Cabinet, had since made such alterations in the draft measure as to render it quite unacceptable to the friendly societies of the country, as well as to all the county and borough insurance committees. Sir H. Kingsley Wood commented strongly on the delay in the introduction of the Government measure, but said that the Prime Minister's speech at Manchester now raised high hopes of its early introduction. It was Mr. Lloyd George's ideal when he launched his insurance scheme that it should be a foundation for a great Health Ministry. If the Ministry of Health Bill was not introduced next session, as he hoped it would be, it would be a test question at the election. The 12,000,000 women voters would plump for the Ministry and all that it means for them in better housing, the stamping out of the white scourge, and the building up of a race worthy of our victories. Lord Northcliffe had recently given an estimate of our losses in this war, which pointed to the real sacrifices that we had made as a nation. It was a crushing justification for the establishment of a Ministry which would do so much to restore not only our heavy losses in the field, but the 500,000 potential lives estimated to have been lost to the country since the beginning of the war owing to a diminished birth-rate. The Bill itself would be a short one, and talk of protracted debates, and the necessity for a large amount of Parliamentary time, was so much camouflage. Lord Milner had given it as his considered judgment that it was perfectly possible to make an immediate and substantial beginning by unifying control and direction at the centre under one head. The Ministry of Health was an urgent war measure, and if the Government were wise they would give it an immediate place, subject to any war business next session.

"Record No. 5" of the Committee on War Damages, issued as a record of the work of the Committee since its institution on October 28, 1915, is a reminder that further financial support is needed if Mr. Lloyd George's promise in July, 1917, is to be made good, as it should be. The concessions already won by the Committee have been substantial, but they fall far short of the possible needs of any of us who may suffer injury or damage from air raids or bombardments. What has been gained from the Government is a reduction of 50 per cent. on the premiums for insurance, compensation, by way of grace, in certain cases for personal injury, and compensation for injury to property since August, 1917, in certain cases up to £500. These concessions in no way meet the case, and the Committee is still pressing for complete National responsibility. But for this to be done effectively financial support is required. All through the Committee have had the advantage of honorary officers, but the cost of printing and communicating with so large a constituency as that represented by the Committee cannot be other than considerable. Subscriptions should be sent to the honorary secretary, Mr. W. H. Southon, 40, Chancery Lane, London, W.C.2. Cheques to be crossed—A/c. of Committee on War Damage, Barclay's Bank, Limited. Not a few of our own readers are naturally more liable to loss from raids than the rest of the public, and should get "Record No. 5" from the hon. secretary and read it.

The Coal Controller's department announces that millions of pamphlets are to be distributed through the local Fuel Overseers telling us that the saving of coal is necessary and how to use coal economically. What is the need for this profuse expenditure on printing? The Chancellor of the Exchequer could and should stop waste such as this by refusing to let the new officialdom rifle the Treasury and place fresh hindrances in the way of the work of the local Fuel Overseers, who are mostly all behind with the issue of the forms. Our own experience in one of the largest boroughs—probably that of many more—is that people who ignore the regulations are getting all the coal they want, while those who content themselves with the smallest limit, and have paid for it more than a month ago, cannot, because the necessary requisition form has not reached them, and when—if ever they do get it—will have to pay the additional rises the coal merchants are clapping on. We may add that we wanted to have less than the lowest limit of coal, but were told on inquiry of the Fuel Overseer that could not be permitted, and that if we bought less than the prescribed limit it would be debited against our allowances of gas and electricity. Hardly the way to save *coal*, surely?

Of the many protests against the proposed permanent plaster "shrine" in Hyde Park, that made by Mr. Stephen Paget, F.R.C.S, the well-known honorary secretary of the Research Defence Society, in the *Times* of the 4th instant, is certainly the most pertinent, characterised as it is throughout by the gentle but effective sarcasm which may possibly touch the quick of those who are responsible for the proposed perpetration of so gross an outrage on all good taste and fitness. Writes Mr. Paget:—

> This shrine, it seems, is to be "of plaster." So is the White City; and when it was clean the White City was beautiful, especially of a summer evening when it was lit up. For the White City was an idle, fantastical pleasure place for open-air music, and for lounging and for side shows. But it soon got shabby. So will this plaster shrine in Hyde Park. Doubtless it can be repainted. But I read that it "will be oblong in form, and about 70 ft. in length." Surely that is too much plaster for Hyde Park. I should have thought that 12 ft. or 15 ft. would be long enough for the longest shrine. Indeed, shrines do not go in for length. The present temporary "shrine" is, I am told, a sort of obelisk, with adjacent slabs laid on the ground; a device so unpleasing that one would not care to go near it. But one could hardly avoid an oblong mass 70 ft. long. At the ends of this oblong there are to be "pylons rising 40 ft. from the ground." I take it that the gateway at King's College, Strand, which is one of the very ugliest things in all London, is a "pylon." Two things, if they were at all like that, in Hyde Park would be dreadful, so near the good-looking old colonnade at Hyde Park Corner. "On the top of each pylon will be a large cone, the symbol of eternity." That is the real horror. How are we to know that cones are symbols of eternity? I have heard that a circle is a symbol of eternity; nobody ever mentioned cones to me till this evening. Indeed, I cannot imagine anything less like than a cone to eternity. For a cone comes to an end. Besides, you can measure it; and you can have a truncated cone. Besides, if a cone were a symbol of eternity, why have two of them? Out of the six millions of us Londoners, are there half a dozen whose thoughts turn towards eternity when they see a cone? I find that I shall be able, as one of the public, to enter through a door in either pylon, walk round a stone, mount six steps, and lay my flowers on a wide ledge. The

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sort of thing that a performing horse does in a circus!

I have no sons; but I have lost many friends in the war. Who has not? I can say my bit of a prayer anywhere—I find the inside of a church a good place for it; I can reverence any little open-air roll of honour, raise my hat to a crucifix, and so on; but Heaven keep me from plaster pylons and cones symbolical of eternity. Let us clear our minds of cant. Which of us now, when the whole nation is in mourning, cares for stage antics in Hyde Park?

Which of us, indeed—except the mummers of officials who have done little but perform stage antics all through the war, plastering even our decent buildings with their showbills and playing to the gallery with a vulgar abandon that has been one long series of insults to the men who have saved England! Even if, as the First Commissioner of Works has tardily announced, the War Shrine is only to be a temporary erection, what is the earthly use of wasting money on a huge sham, when the present structure serves all needful purposes?

We treated ourselves, after reading Mr. Stephen Paget's letter, to a copy of his delightful little book, "I Sometimes Think," published by Macmillan in 1916, and have been reading it with solid satisfaction. It is addressed to "young people," but their elders might well study its "fruits of idleness," as he calls them, in his dedication to his wife, especially the sixth essay entitled "London Pride," in the third section of which, taking as his text the touch of contempt of the Master in his reply to the disciple who was smitten with admiration of the stones and buildings of Jerusalem, Mr. Paget has some remarks on London architecture well worth consideration. For instance:—

> Have no reverence for the mere size of any building, nor for its weight and solidity; think first what the building is for. The size of the dome of St. Paul's is delightful, because St. Paul's is St. Paul's; the massiveness of the Tower of London is delightful, because it was built as a fortress and a prison. But weight and solidity without sufficient purpose are not worth looking at. I am thinking of the Gaiety Theatre, and of a business house in Regent Street. The one provides light amusement: the other provides gossamer goods, laces, handkerchiefs, "lawn as white as driven snow." For those uses very high walls of marble and granite are excessive. The theatre, being in the Italian style, might do for a castle for Cæsar Borgia; the linen warehouse, armed in Northern granite, might do for Macbeth; but why should either of them, dealing in such flimsy goods, lay such a heavy weight on earth? And why is there a gold angel, with a trumpet for the Day of Judgment, on the roof of the Gaiety Theatre? At Chartres, on the roof of the cathedral, I have seen a mighty angel, with a proper sense of the world's tragedies, slowly turning in the wind this way and that, as if it could wake with its trumpet all the quick and dead in Chartres. But this Gaiety angel is advertising something light, to make us forget anything so like the Day of Judgment as the War. I find it as offensive as its neighbour the Gryphon; I long to see it down and its place taken by a gold spike or knob.

We should have liked to quote a few words from Mr. Paget's eighth essay, "Si Monumentum Requiris," on War Memorials, not for the benefit of some of those who are designing them, who are hopeless, but for the consideration of those who are paying for them and crowding them into our churches and public buildings in ignorance of the fact that they are insults to the noble dead and outrages on good taste, with the result that in another fifty years all will be as ashamed of most of them as we are of the objects which, in Westminster Abbey and St. Paul's, still similarly offend. A "War Memorial," truly enough, as Mr. Paget says, cannot—at any rate, should not—be on the lines of a Jubilee memorial, for the War is not one person, but millions of persons; not one event, but millions of events. There is only one structure large enough to be a memorial of the War, and that structure is the world. There is only one inscription long enough; already it is cut across the world, cut deep and longer and deeper with every hour of the War.

Among the titles which youth bestows on age, there is one, so Mr. Paget tells us in his preface, he covets and hopes to obtain from that fount of honour, his grandchildren—that of Old Fossil. We venture to say he will not get it! The old fossil who loves to refute popular beliefs and to upset comfortable theories, and who is "aggravating," as the nurses phrase it, and whose formula is "I told you so and you wouldn't believe me," mostly petrifies out of remembrance in one narrow groove of the fabric of the world; and Mr. Paget is never likely to keep him company or to represent the Palæozoic period in the glass case of some museum. He has left his mark too substantially for that, and all that he has written throbs with the vital touch of the spirit which giveth life. They are not tabled yet with his other works, but we have a lively and grateful remembrance of his unsought but most welcome contributions to *The English Mechanic* recently, which appeared in its issues of December 10 and 17, 1915, and January 28 and August 11, 1916, embracing three sympathetic memoirs of Pasteur, Lister, and Victor Horsley, the three great helpers of their time to lift the load of needless suffering from agonised humanity, whose vindication from the enemies of science has not been the least of their biographer's services to the Society of which he is the life and soul.

THE SURVEYORS' INSTITUTION CONFERENCE ON HOUSING BY PRIVATE ENTERPRISE.

The trenchant but very practical report sent to the Local Government Board of the conference convened last July by the Surveyors' Institution will, we trust, have some effect. In clear, cogent, and business-like fashion it demonstrates the necessity for the co-operation by private enterprise, and the only way in which it can be secured. It will be remembered that the conclusions presented are representative of the experience of every recognised institution connected with building. The deliberations at the conference were shared by the Auctioneers' and Estate Agents' Institution (3,000 members); Building Societies Association (209 societies, 382,577 members); Federation of British Industries (846 members); Garden Cities and Town Planning Association (80 societies); Land Agents' Society (1,332 members); Committee of the National Conference on Housing after the War (100 members); National Federation of Building Trade Employers (6,000 members); National Federation of House Builders (400 members); National Federation of Property-owners and Ratepayers (13,750 members); Royal Institute of British Architects (4,336 members); and the Surveyors' Institution (5,000 members).

It goes without saying that the conference wasted little time in demonstrating the necessity for enlisting private enterprise. Even Mr. Hayes Fisher and the rest of the believers in the omnipotence of local bodies have, in more or less tentative fashion, at last admitted that neither the present emergency nor the needs of the future can be met without it. The only question worth consideration is how can it be had? The conference unanimously agreed that under existing conditions no form of private enterprise could take its part in building working-class houses unless adequate financial assistance were made available. They then proceeded to consider the form or forms of financial assistance which would be required (1) to meet the anticipated difference in the cost of houses built at a time of exceptionally high prices and the subsequent estimated cost of the same houses on things settling down to post-war conditions, hereafter referred to as the "extra war cost," and (2) to provide the capital ordinarily required for and during building operations.

Dealing with the first item above-mentioned the conference suggest a grant from national funds to all agencies which erect houses according to approved schemes during the transition period, representing the extra war cost as defined, and taking the form of a percentage to be applied to the actual ascertained cost of houses erected in accordance with approved schemes, and calculated according to the relation between the estimated extra war cost and the estimated average cost of erection of the houses of the character approved. The percentage to be adjusted periodically for new schemes to meet the changing conditions during the transition period. Such a scheme would be simple and workable, and, by enabling the agency responsible for building to know beforehand the extent of the assistance to be received, would permit the usual course of business by sale or otherwise to be followed.

That Parliament will not allow public funds to be used for private profit is taken for granted. That is a very wholesome principle, no doubt. That it has been adhered to in other matters is doubtful! We are by no means referring to the precedent of the Corn Production Act, and the control which has been established in connection therewith.

Should Parliament, however, refuse a definite financial grant, the conference are of opinion that the minimum State assistance necessary to attract private enterprise must make good any loss of income during the transition period on the basis of the market rate of money for the time being, and loss of capital at the end of that period. No offer to meet merely a proportion of such loss could secure the co-operation of agencies bound to view the undertaking from a business standpoint. Loss of income must be calculated by comparing the net return in the shape of rent with interest at the borrowing rate on the ascertained cost of the house, and should be met by a grant sufficient to meet the estimated annual deficit. In estimating capital loss the ascertained cost of the house or houses, which should be based upon the fair and usual cost of building similar houses under contract, should be measured against their value, as between a willing buyer and

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a willing seller, at the time the valuation was made. As regards rents and the possible prolongation of restrictions thereof, it is pointed out that the loss might be further minimised, and enable lower rents to be charged, if the pre-war standard of assessment both for imperial and local taxation were retained in respect of all houses not exceeding the following rateable values:—£22 in the London area, £20 in Greater London, £14 in other urban districts, and £8 in rural districts, and that comparable houses to be erected should be assessed on the same basis. This concession might very well be made during the transition period, in that the higher rents which would have to be charged, and on which assessments would in ordinary course be based, might reasonably be looked upon as attributable to the abnormal conditions which had largely increased the cost of new houses and the maintenance and other charges in connection with existing houses. At the end of that period the level of rents would have settled down to post-war conditions, and new assessments based thereon might properly be made. Such a proposal would throw no unfair burden upon localities, as no additional services would have to be provided owing to the fact that rent had had to be temporarily increased to meet exceptional circumstances.

It is evident enough that the great demands inevitable on capital when peace comes will compel the adoption of some means to finance private enterprise. If, indeed, private enterprise is encouraged, and not handicapped by unfair competition with favoured public bodies, no inconsiderable sums will be available from ordinary investors, but the bulk of the money will have to be provided out of public funds and without circumlocution. With this end in view, either special departments of existing banks, or a Housing Bank constituted by the Local Government Board under the authority of the Treasury, would be effective, especially if the closest co-operation between the bank and building societies is fostered. The advances for building operations should be made on reducible mortgages spread over fifty years, and on sales of houses the proportionate outstanding balance of the mortgage should be transferable to the purchaser on conditions sufficient to safeguard the State from loss. Eighty per cent. of the cost of buildings, roads, sewers, and sites should be obtainable, the advances being made in instalments on the certificate of a qualified surveyor, nominated, if desired, by the Local Government Board, at the rate of 66 per cent. of the cost of the work as it proceeds, with the balance on completion. Additional advances should be allowed in approved cases.

Discussing the proposal that houses should be limited to twelve per acre, the conference points out that in certain cases land in process of development under schemes approved by local authorities has already been set out to allow of a greater number of houses per acre than that proposed, and that any change in such circumstances would be impracticable. Full advantage should be taken of local knowledge in considering and authorising schemes, and this might probably best be done by setting up special housing committees, composed partly of elected and partly of co-opted members, possessing special knowledge and experience of the subject and acquainted with the needs and requirements of the district, so as to permit the Local Government Board to decentralise the work in connection with these housing schemes so far as possible.

The rural cottage problem, it is recognised, is a different one from that in regard to urban houses. Where a shortage of houses in any parish or district is certified by the Board of Agriculture to exist, the owners of estates should, in the first instance, be given the option of themselves supplying the need. Should they desire to exercise that option, they should be placed with regard to financial assistance, etc., upon an equality with local authorities or other agencies providing houses under approved schemes. If, on the other hand, landowners prefer not themselves to erect houses, the necessary sites should be obtainable by the local authority or other agency which undertakes the duty at the market price of the land, if necessary under compulsory powers.

Other deterrent influences which have exercised and are still perniciously affecting the provision of houses are referred to in the report, including By-laws; Part I. of the Finance (1909-10) Act, 1910; The Increase of Rent and Mortgage Interest (War Restrictions) Act, 1915; and building materials and standardisation. Local authorities, it is averred, on the recommendation of the proposed Housing Committee, should be encouraged to amend or remit any local by-laws dealing with the construction of houses or streets which appear unduly to hamper housing schemes, or to check the use of new, improved or cheaper methods of construction. Part I. of the Finance (1909-10) Act, 1910, has from the first exercised a prejudicial effect on housing, owing, not only to the amount of the tax imposed upon the industry, but also to the feeling of insecurity and alarm aroused by a measure which its supporters threatened to be merely the forerunner of still more advanced legislation. The Conference have arrived at the conclusion that the removal of the provisions dealing with increment value duty, reversion duty, and undeveloped land from Part I. of the 1910 Act is necessary if capital and individual energy are again to be attracted to the erection of working-class dwellings as an investment. In regard to the Increase of Rent and Mortgage Interest (War Restrictions) Act, it is obvious, at any rate, that an amendment of the Act, permitting rents and mortgage interest to be raised, will be necessary. It has been suggested that if the complete removal of all restrictions does not prove practicable immediately after the war, the 1915 Act should be amended to permit an increase in rents and mortgage interest by a percentage sufficient to meet the average increase in cost of maintenance and other charges since the standard rents came into operation. In the event of any preference in respect of building materials proving necessary after the war, it would be essential that all forms of private enterprise should be placed in a position of equality with public bodies as regards price, distribution, and priority of delivery.

Reiterating our hopes that even at this late hour the report may induce the Government to take a broader and more statesmanlike view of the whole matter than it has yet done, we cannot refrain from deploring that from the first it was not recognised that action would have been facilitated and mistakes avoided, if the wise and moderate counsel of the representative bodies of the professions and trades concerned had been sought in the first instance. Now that it has been tendered, the responsibility for breakdown will indeed be a heavy one on the part of officialdom if it is not heeded.

Mr. Edward Holroyd Bousfield, aged 85, of Cromwell Road, South Kensington, and Wasborough Oxford, a partner in Messrs. Edwin Fox and Bousfield, auctioneers and surveyors, has left £27,217.

DESIGNS FOR SWISS PUBLIC HOUSES AND RESTAURANTS.

The Swiss Commission for Public House Reform promoted a competition for the purpose of obtaining the most suitable designs for a reformed class of temperance public houses and restaurants which they propose to build. The rules for the competition and the designs submitted by various architects are described and illustrated in the present article.

The subject was divided into three classes. A.—*The Common Room.* In every community the want is felt of a common room, where the youth could meet for reading, writing, and entertainment; also of a place where young people in business far from their parents could take their meals, and where temperance drinks could be served. B.—*The Public House.* This would be similar to class A, but on a larger scale, and should contain rooms for reading, writing, education, etc., also club-rooms, and possibly a concert or theatre-hall, and would be arranged to suit local requirements, with perhaps a garden or a place for outdoor games.

C.—*The Public House with local offices.* In many places there are already buildings erected for parish councils or by religious bodies. The object should be to collect as many such interests into one central building with the arrangements described in Classes A and B, and in all cases provision should be made for the supply of temperance meals.

The competition was opened with a view to obtaining typical designs, which, of course, would require modification to render them applicable to the local conditions of any actual site. The *Schweizerische Bauzeitung* has offered its aid in publishing the results and reproducing some of the best designs selected from the 149 sets which were received. There were 33 designs submitted in Class A, and the first prize of £4 was awarded to a design by Mr. Epitaux, of Lausanne.—*Schweizerische Bauzeitung*, July 20, 1918.

OBITUARY.

Mr. Frederick William Hayes, landscape painter and novelist, died at Hampstead on the 7th inst., in his 71st year. He was born in Liverpool, and at first studied architecture, but abandoned that for painting. He was one of the founders of the Liverpool Water Colour Society. He first exhibited at the Royal Academy in 1872, and from then until 1890 he was a regular exhibitor of coast and mountain subjects. After 1890 he turned his attention to illustration, and during the next twenty years or so he produced about 3,000 drawings, principally in black and white. His historical novels, which he illustrated himself, included "The Shadow of a Throne," "A Kent Squire," and "Gwynett of Thornhaugh." A comedy of his, "Medusa," was produced by the Kendals at the St. James's Theatre in 1882. Mr. Hayes was also a keen social reformer, and did much work for the Fabian Society and the cause of land nationalisation. In addition, he wrote a number of songs. During the war he was engaged in work at the Ministry of Munitions, but found time to exhibit at the Royal Academy and the Royal Institute, as well as at several provincial exhibitions. Mr. Hayes was twice married, and leaves two sons and two daughters.

The Gelligaer Council, Bargoed, have received a number of applications for the appointment of architect and surveyor in connection with their housing scheme after the war, which will involve an expenditure of nearly three-quarters of a million of money.

Mr. Herbert William Rowe, of the Old Church Yard, Liverpool, a member of the firm of Graham, Rowe, and Co., merchants, Mersey Chambers, who died at Leamington, Warwick, on February 28, aged fifty-seven, has left estate of the value of £80,993 gross, with net personalty £80,637.

Last year, street paving in the City of London cost £41,449, lighting £20,075, cleansing and watering £94,139, sanitary works £6,109, venereal treatment, etc., £3,626, inspection and condemnation of meat £6,240, and lavatories £13,074. The sale for manure of condemned meat brought in £3,073, and lavatory fees £8,097.

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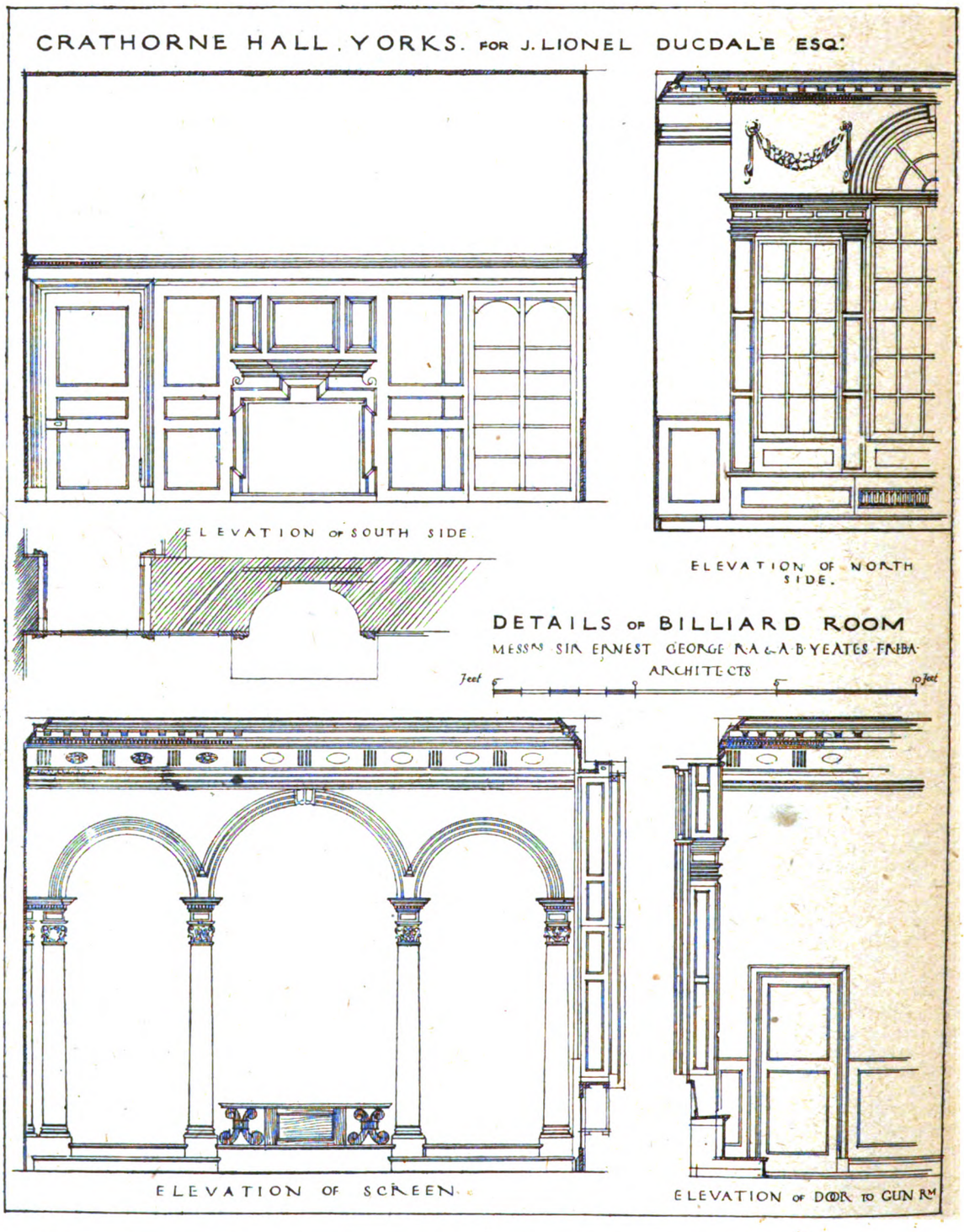
CRATHORNE HALL, YORKS. FOR J. LIONEL DUCDALE ESQ:
ELEVATION OF SOUTH SIDE
ELEVATION OF NORTH SIDE.
DETAILS OF BILLIARD ROOM
MESSRS SIR ERNEST GEORGE RA & A B YEATES FRIBA
ARCHITECTS
Feet
10 feet
ELEVATION OF SCREEN
ELEVATION OF DOOR TO GUN RM

BILLIARD ROOM DETAILS, CRATHORNE HALL, YORKSHIRE.

Messrs. Sir Ernest George, R.A., and A. B. Yeates, F.R.I.B.A., Architects.

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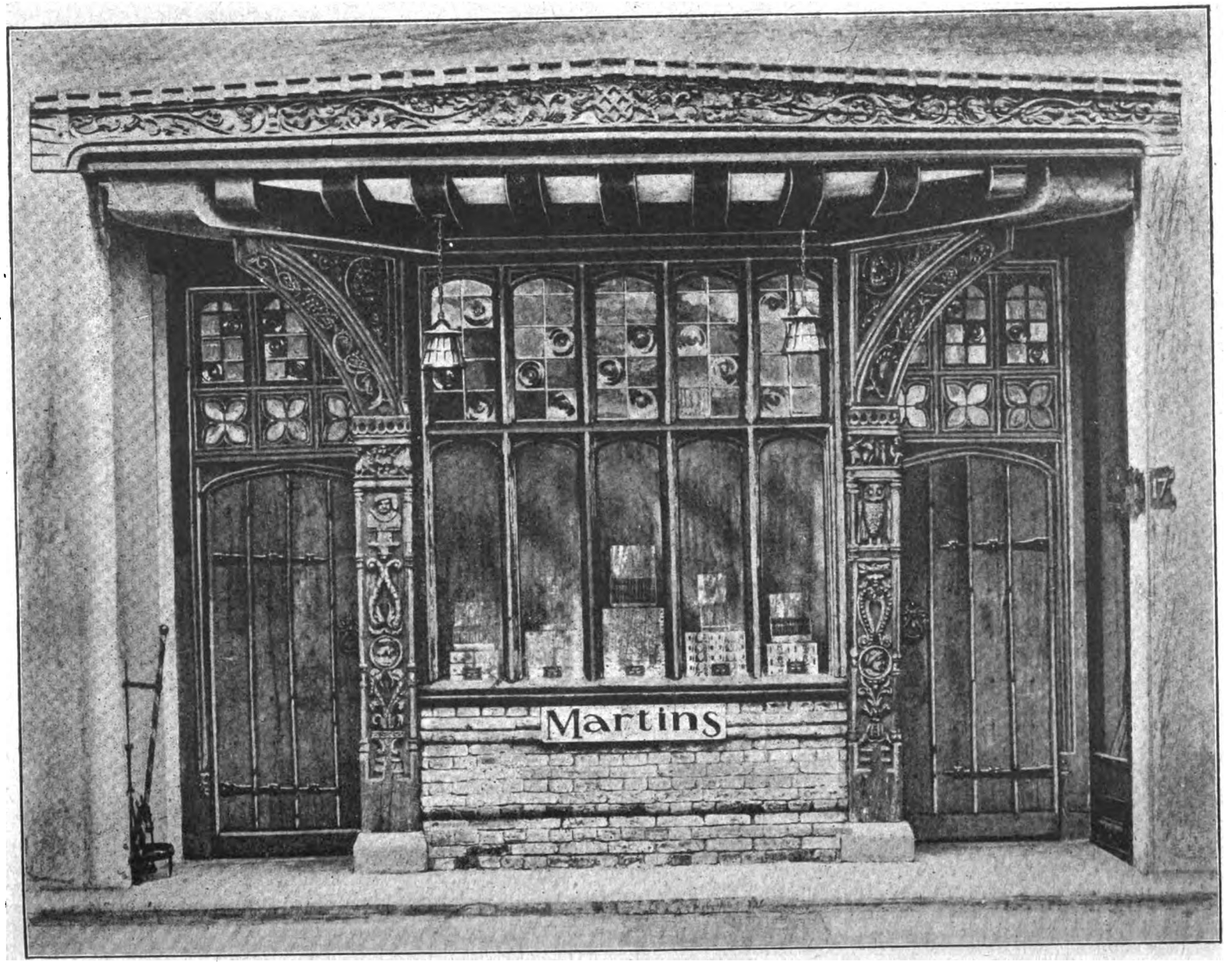

MESSRS. MARTINS' NEW SHOP, 17, COVENTRY STREET, W.

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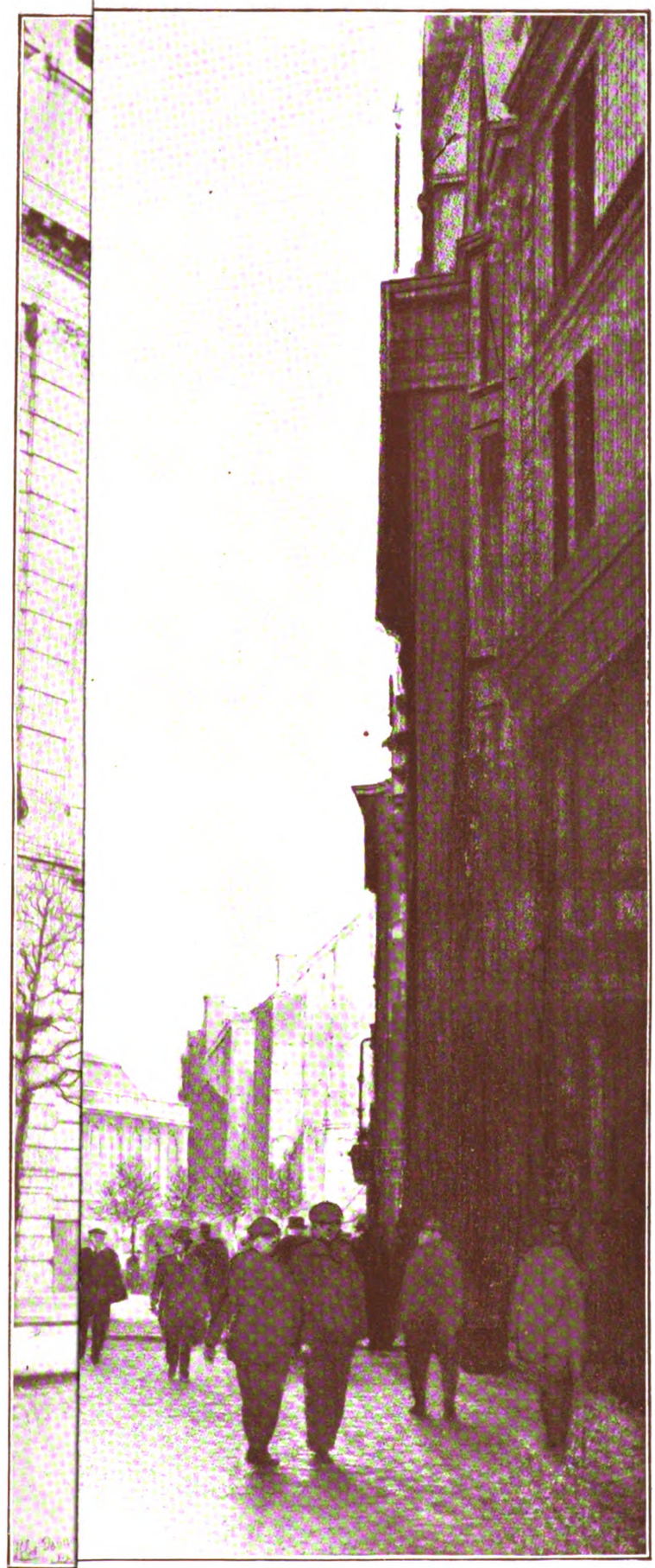

RCH, AND THE COURTS OF JUSTICE.
of Australia House.

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Bedford Lemere, Photo.]

AUSTRALIA HOUSE MAIN ENTRANCE, STRAND, W.C.

Dr. A. Marshall Mackenzie, R.S.A., Architect (Messrs. A. Marshall Mackenzie and A. C. R. Mackenzie).
Mr. Harold Parker, Sculptor.

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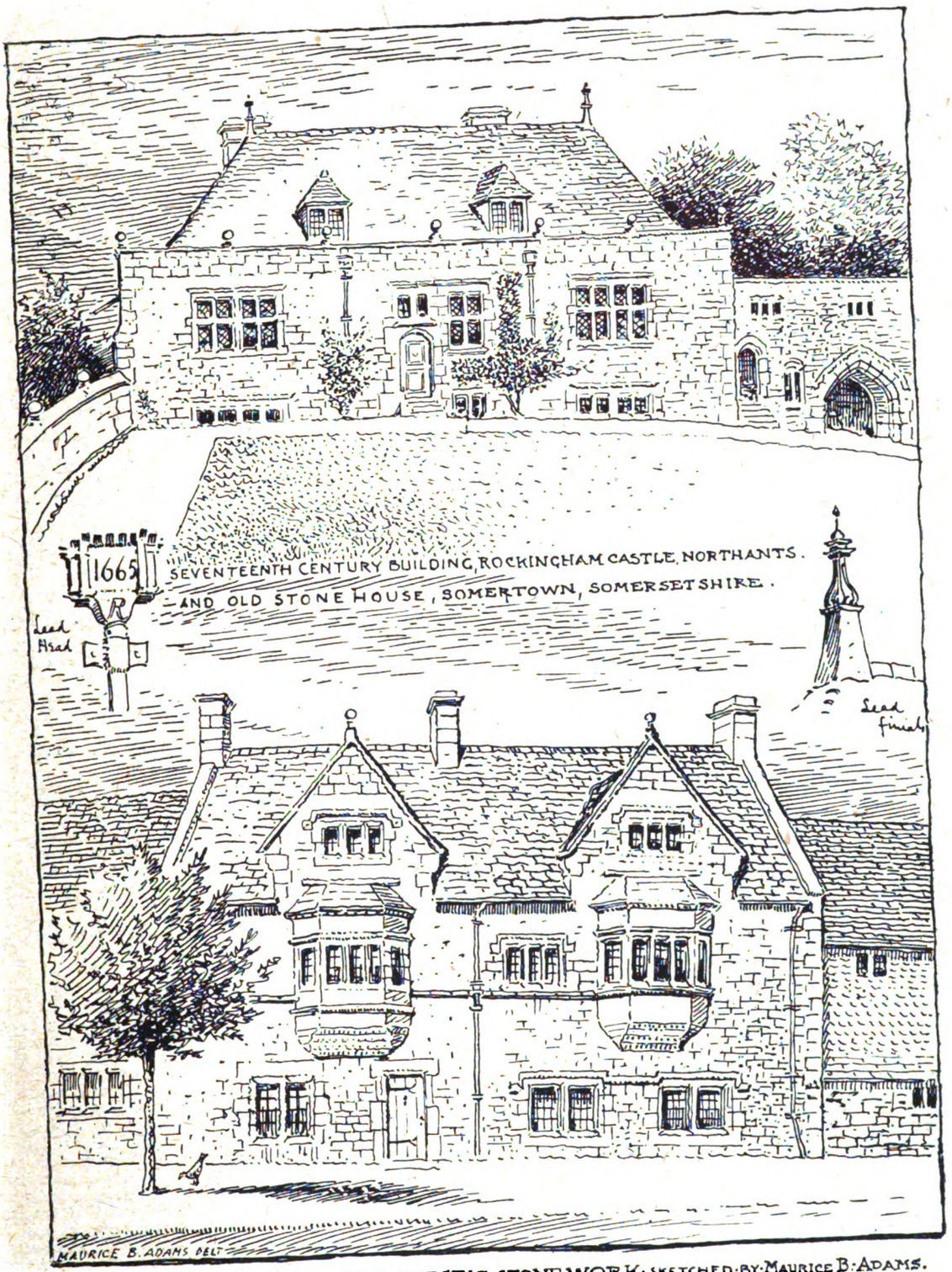

HISTORIC EXAMPLES OF DOMESTIC STONE-WORK. SKETCHED BY MAURICE B. ADAMS.

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Our Illustrations.

AUSTRALIA HOUSE, STRAND, W.C.

The photographic view reproduced as our double-page to-day was shown at the Royal Academy this year. The picture, looking eastward along the Strand, includes the south façade of Australia House, St. Clement Dane's Church, erected by Sir Christopher Wren, and tower by James Gibbs in 1719; also the Royal Courts of Justice, of which George Edmund Street, R.A., was the architect, in the 'seventies. The single page illustration shows the main entrance at the corner of Australia House. The sculptures flanking this portal represent "the awakening" and "the prosperity of Australia." To the right figures the dying explorer and his companion. To the left the group is symbolical of the industries of the colony. The sculptor is Mr. Harold Parker, whose vigorous compositions are of heroic scale We gave a photograph of the Royal Academy model of the upper part of this angle-set façade of the building in our issue for August 14, illustrating the intended bronze statuary group by Mr. Bertram Mackenal, M.V.O., A.R.A., of "Phœbus driving the horses of the sun." Various illustrations, with a plan of the building, appeared in our journal for July 4, and on October 20, 1913. The King opened the premises on August 5 this year. Dr. A. Marshall Mackenzie, R.S.A., of the firm of Messrs. Marshall Mackenzie and A. C. R. Mackenzie, FF.R.I.B.A., is the architect of the building.

MESSRS. MARTINS' NEW SHOP, 17, COVENTRY STREET, W.

Messrs. Martins, the cigar merchants of Piccadilly, have recently erected this exceedingly interesting shop front at the top of the Haymarket, at No. 17, Coventry Street, one of the firm's branch premises. There are two entrances, one leading to the upper floors, and that to the right opens direct into the shop. The old parts thus ingeniously reinstated came from East Anglia, and comprise the main lintel and one corner-post belonging to an old dilapidated East Suffolk house, dated 1485. This post has been duplicated and fixed as represented in the photograph, the front of the shop being recessed from the frontage line. The space above between the lintel and the cills of the first floor windows is flatly treated in coloured plaster, looking like jointed masonry, but the side piers remain unfinished owing to existing war restrictions. The plainer the surrounds of the timber work are made, so much the better, as the best setting for the whole design. The drawing from which this photograph was taken does not exactly show the brickwork filling below the cill of the shop window as actually executed, because the bricks are built up to a shaped contour in section. This has been cleverly managed in an antique-looking manner, and the new parts of the English oak framing have been carved in close imitation of the original, old seasoned stuff being carefully chosen for the purpose. This work has been executed by Mr. Frederick Tibbenham, a clever craftsman working at Ipswich, in conjunction with Messrs. Maple and Co., of Tottenham Court Road.

HISTORIC EXAMPLES OF DOMESTIC STONEWORK.

ROCKINGHAM CASTLE, NORTHAMPTONSHIRE, AND AN OLD HOUSE AT SOMERTON, SOMERSET.

The history of so famous a castle as Rockingham is necessarily associated with many foremost events, and much, therefore, has been written of very considerable attractiveness about its records from early times to the time of the Stuarts. The structure shown was added to the Edwardian stronghold entry during the later half of the seventeenth century. The plain corbelled-out bay windows need no description, but they are not exactly repeats. The general hang of the work is typical of much similar masonry seen down west in Dorsetshire and Devon. Lytes Carey, in Somerset, is earlier and more particular, due to bigger belongings; but Sherborne old school is in the same quiet manner. The splendid oriel to the gatehouse at Cerne Abbas is, of course, richer and an outstanding piece of work.

BILLIARD-ROOM DETAILS, CRATHORNE HALL, GARM-ON-TEES, YORKSHIRE.

The entrance front, ground plan, and a cross section of this stone-built house will be found reproduced from the architects' working drawings in our issue of August 14 last, when we gave some particulars of the work, for which Messrs. Trollope and Sons were the contractors. To-day we add a sheet of details of the arcade and internal treatment of the billiard-room. The architects are Messrs. Sir Ernest George, R.A., and A. B. Yeates, F.R.I.B.A., of Maddox Street, Hanover Square, W.

TEMPERATURE TESTS ON CONCRETE COLUMNS.

There is no more useful line of experimentation being carried on to-day than that having reference to the action of concrete under fire conditions. Concrete and fireproof are two terms that have naturally become associated, and it is something of a surprise when a fire of the nature, for example, of that which occurred at the Quaker Oats plant at Peterboro, reminds us that temperature conditions may become such that even concrete will crumble and lose its normal properties.

On this account a résumé of tests recently carried out by Mr. W. A. Hull, in the United States Bureau of Standards, and described before the recent convention of the American Concrete Institute, is of timely interest. The report deals largely with methods and is unduly long for a complete reproduction, but the conclusions covering tests on columns constructed with both gravel and stone aggregates are given below. These show, in the main, that the limestone aggregate will withstand a high temperature much better than a gravel aggregate, though the tests also demonstrate that different samples of each give different results. The quantity and arrangement of the reinforcements also have an important influence.

SUMMARY AND DISCUSSION OF RESULTS WITH GRAVEL CONCRETE COLUMNS.

It has been observed that in all gravel columns of this series, there has been a marked tendency for the outer concrete to break up early in the fire test, and for the resulting slabs and fragments to separate and fall off, exposing the load bearing portion of the column. The effect of this process, in the most extreme cases, is to strip the load bearing column of its insulation, early in the fire test, with the result that comparatively high temperatures are reached in the steel and in the interior of the column. This spalling is most active in the columns having spiral reinforcement. Round columns with vertical reinforcement, with ties every 12 in., suffered much less from spalling than those with spiral. Square columns, vertically reinforced, spalled and split badly. Round columns with no reinforcement showed an intermediate behaviour between that of the round columns with spiral and those without. Strength tests made at the end of the 4-in. fire tests showed that gravel concrete columns with spiral reinforcement had retained from less than 15 to approximately 18 per cent. of the strength of the duplicate column tested without exposure to heat. A round column with vertical rods and no hooping had retained approximately 30 per cent. of its strength, square columns from 16 to 20 per cent., and a plain column approximately 23 per cent.

These unfavourable results with gravel concrete are similar, in a general way, to those which have been observed, at various times, in laboratory heat tests and in fires in concrete buildings. Prof. Ira H. Woolson, in his final report to the American Society for Testing Materials, in 1907, on work done during 1905, 1906, and 1907, on the effects of heat on concrete, reported adversely on gravel concretes from the pure quartz gravel in extensive use in the vicinity of New York City. The following are extracts from this report:

"The writer is convinced that concrete made from this particular gravel is not reliable as a fire-resisting material. Whether other grades of gravel would give equally unsatisfactory results is a matter for investigation.

"The cause for this failure of the quartz mixture is not easy to locate. The most plausible reason seems to be the relatively large coefficient of expansion of quartz. It is about twice that of feldspar, which is one of the predominant minerals of trap rock. Clark's 'Constants of Nature,' published by the Smithsonian Institute, gives the cubical coefficient of expansion for these minerals as follows:—Quartz, .000036; feldspar, .000017.

"According to the same authority, quartz has another peculiarity of expansion, namely, that the expansion in the direction of the major axis is only half that in the direction of the axis perpendicular to the major axis. This unequal expansion may further contribute to its tendency to disintegrate the concrete under action of heat."

Referring to this explanation, Professor Woolson says, in his report, published by the National Board of Fire Underwriters, on a fire in a reinforced-concrete warehouse at Far Rockaway, New York, November 10, 1916:—

"If this explanation is correct, as evidence thus far produced seems to sanction, all concrete specifications should contain a definite warning against the use of quartz gravel in concrete liable to be exposed to high heat. Where it is so used underwriters should take the fact into consideration in assuming the risk."

As already stated, concrete from the Pittsburgh gravel made an unfavourable showing in an investigation recently made by the Bureau of Standards with smaller specimens.

There is strong evidence that the peculiar behaviour of the gravel concrete in our column tests is due to expansion; yet the Pittsburgh gravel is not made up of pure quartz pebbles. It contains a few quartz pebbles along with a much larger proportion of pebbles of sandstone and of other harder rock, all appearing to be high in quartz. Inasmuch as most of our gravels have an exceedingly high quartz content, it would seem, from the information available at present, that any gravel aggregate should be investigated before being used, unprotected, in important work requiring fire-resistive properties in the concrete.

The observations made in the course of these tests seem to indicate that a little anchorage or some light reinforcement, in the protective covering, might serve to hold the latter in place in hooped columns such as these, even though the covering were broken up by expansion. This is to be tried in later tests. It would seem, however, from a careful consideration of the action of these columns, in connection with the peculiar expansion behaviour of quartz, that much depends on the suddenness of the heat treatment, and that in fires in which the temperature rise is not particularly rapid the tendency to expansion troubles would be much less than in fires producing heat with great rapidity. It should be taken into consideration that in these fire tests the columns are not plastered, and that the temperature rise is rapid, especially in the first half-hour. It is conceivable, and even probable, that the protection of even a rather thin layer of some other material, such as plaster, over the concrete would be sufficient to make the heating of the concrete enough more gradual to prevent the spalling. Some investigation of this phase of the problem is proposed as a part of the present series. It would appear that gravel concrete of a nature similar to that used in this investigation needs the protection of some other material, for while it is probably true that most fires in buildings do not have as sudden a temperature rise as that of these tests, yet it is conceivable that with any one of a number of kinds of occupancy an exceedingly rapid temperature rise can be produced, in a building, after the first few minutes required for

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ignition to get well under way, over a large area.

SUMMARY AND DISCUSSION OF RESULTS WITH LIMESTONE CONCRETE COLUMNS.

In the limestone concrete columns there was no spalling and very little cracking during fire test; this statement applies to square columns as well as to round columns with both types of reinforcement. Consequently, in all the tests of limestone concrete columns the columns had the full benefit, during the entire fire test, of the insulation of that part of the concrete provided for fire protection, and the temperatures shown, both in the steel and in the interior concrete, are correspondingly lower. It is seen, however, that in spite of this protection temperatures were reached, in the steel and in the load-bearing concrete, which would be expected, according to such knowledge as we have, to reduce the strength of both steel and concrete. In the spirally reinforced columns with this aggregate it is not possible to give the ultimate strength of the columns at the end of the fire test, for obvious reasons, but it evidently was, in both columns, over 50 per cent. as great as that of the duplicate column which was tested without fire exposure. These columns, after cooling, showed a strength approximating 70 per cent. and 71 per cent. respectively of the maximum of the unfired column. Each of the vertically reinforced columns, both round and square, without spiral, tested while hot at the end of the fire test, showed a maximum strength approximating 50 per cent. of that of the unfired column of the same class.

It is obvious that the comparatively high strength of all the limestone concrete columns at the end of the fire test is consistent with the observation that there was no spalling and very little cracking during fire test; for not only did these columns have the full benefit of the heat insulation of the outer concrete, they must have been comparatively free from expansion stresses of various sorts which must have been important factors in the weakening of the gravel concrete columns. It should also be taken into consideration that there is some advantage thermally in the decarbonation of the limestone next to the surface of the column. High calcium limestone decarbonates rapidly, under these conditions, at temperatures approximating 900° C. The reaction is endothermic, the decarbonation of a pound of limestone absorbing approximately the same amount of heat as the evaporation of three-quarters of a pound of water. Heat penetrates concrete with some difficulty, and the absorption of heat in the course of its passage through an insulating material may become an important factor in retarding temperature progress in the protected member. This is pretty generally appreciated in connection with the thermal effect of the driving off of water, as in the dehydration of gypsum, but has not been so generally taken into consideration in connection with the driving off of carbon dioxide. Inasmuch as the quantity of limestone in the layer, of a thickness of ⅝ to ¾ in., which was decarbonated in these tests, was considerable, the thermal effect of the heat absorption should not be wholly disregarded. Furthermore, it is probable that because of its greater porosity, the decarbonated material would be a somewhat better heat insulator than the original limestone, so that, from the thermal standpoint at least, decarbonation of limestone may be considered as an advantage. As to compensating disadvantages of the decarbonation, this action is hardly to be charged with any weakening of the column, for any concrete which had attained a temperature of 900° C. could no longer be counted on for any considerable strength. As to salvage, the matter of repair, after a fire, the slaking off of the outer concrete to a depth of say ¾ in. might entail some expense in replacement, provided the concrete did not have to be replaced to a greater depth than this, irrespective of the calcination. But there may be some compensation for this in the fact that the depth to which the decarbonation of the limestone has progressed can serve, at least roughly, as an index to the severity of a fire and the probable condition of the inner concrete; this is at least a better index than judgment based on the depth to which the concrete appears to be dehydrated when attacked with a pocket knife.

REINFORCEMENT.

It has been shown that gravel concrete columns with both vertical and spiral reinforcement gave particularly poor results, even poorer than those which had no hooping; the limestone concrete hooped columns, on the other hand, made particularly good showings. It is obvious that the steel in the hooped gravel columns could not contribute much strength at the temperatures which it attained; it appears, however, that the hooping had something to do with the rapid breaking up and shedding off of the covering in these columns, so that the hooping may be regarded from these results as increasing the hazard with gravel concrete. With the exception of this one type of column, it may be said that in all cases the reinforcement, although rather thinly covered at the best, gave a fairly good account of itself; it will be observed that in the gravel columns, both the plain ones and those vertically reinforced, showed a maximum strength, after fire test, of approximately twice their working load, while both types of limestone columns showed strength approximating four times their working load; in the hooped limestone columns it was evidently somewhat higher than that.

GENERAL CONCLUSIONS.

It is obvious from the results of these tests that there is an important difference in aggregates in respect to the ability of concrete structural members containing them to withstand fire. From the showing made by these gravel concrete columns, together with the other evidence produced, there seems to be no way of avoiding the conclusion that unprotected concrete from some of our gravel aggregates, probably from many of them, is comparatively vulnerable to severe fires in which the initial temperature rise is rapid. This would probably not apply to gravels that were calcareous rather that silicious in their nature, but would apply to aggregates of crushed stone from silicious rocks such as sandstones.

The evidence in regard to limestones is less sweeping in its application than that in connection with the gravels because all the evidence presented has been gathered from tests of one kind of limestone. It is probable that some limestone might give better and others poorer results than those produced by this particular grade of stone.

The data so far obtained do not indicate that the proportional credits now being given for reinforcement of the types here represented would be appreciably affected by considering their performance in severe fire tests, provided the protective material remained intact.

It is evident that the insulation afforded by a thickness of 1½ ins. of concrete is not sufficient to prevent loss of strength in columns in a severe fire of long duration. On the other hand, all the limestone concrete columns tested in this investigation have shown an ultimate strength exceeding three and a half times the rated working load of the column. It appears from this that factors of safety employed in present engineering practice are sufficient to allow for the reduction in strength that may be expected in severe fires of four hours' duration, assuming that the aggregate is not of a nature which tends to make the concrete liable to spalling. It would appear from these results that if more adequate insulation were provided, the factors of safety used in design could be reduced, so far as considerations of fire hazard are concerned, and that from the fire resistance standpoint the use of insulating material, other than concrete, in the protection of columns, would be worthy of consideration.

The factors of safety used in engineering practice in the design of load-bearing structural members are only such as are considered necessary to assure adequate strength in these members at ordinary temperatures. It may be stated, therefore, as a fundamental principle of fire protection that load-bearing structural members of reinforced concrete or of other materials should be so protected by heat insulating material that a load-bearing member shall suffer no loss of strength by reason of the attainment of higher temperatures in a standard fire test of the duration prescribed for the class of construction for which it was designed. — *The Contract Record.*

TEMPORARY WAR BUILDINGS FOR SCHOOL PURPOSES AFTER THE WAR.

A circular has been issued by the Board of Education as follows :—

The Board of Education have been in communication with the "Lands and Buildings Reconstruction Committee" upon the subject of the temporary buildings which are now in the occupation of the War Office, the Ministry of Munitions, and other Departments, and some of which may after the war be useful to local education authorities.

The Board understand that few authorities have as yet replied to the circular letter issued to them in May, 1917, over the signature of Major F. Tudsbery, secretary to the committee. It appears to the Board to be important that authorities who are likely to need temporary buildings should make inquiries of the committee in advance with regard either to particular buildings which may already be standing in their areas, or to any types of building capable of being moved and put up again. This would greatly assist the Department in dealing with the business and would ensure the local authority being notified when any particular buildings in which they may be interested are coming up for disposal. It would not involve the authority in any obligation to purchase. The address of the committee is :—The Secretary, Lands and Buildings Reconstruction Committee, 6, St. James's Square, S.W.1.

Drawings of those types of building which appear to the Board to be capable of being used for temporary purposes as schools of any kind can be seen at the office of the Board's architect.

Some diagrams of a somwhat meagre character are attached to the circular.

NOTES ON THE METHOD OF CONSTRUCTION.

The materials and method of construction employed in the buildings illustrated in the diagrams, while varying slightly in different types, may be briefly summarised as follows :

Foundations.—Concrete blocks, 18 ins. by 18 ins. by 18 ins., and brick piers 9 ins. by 9 ins. by 3 courses, on which are laid 4 ins. by 4 ins and 4 ins. by 3 ins. rough fir plates framed together.

Floors.—3 ins. by 2 ins. rough floor joists at 15 ins. centres covered with 1 in. ploughed and tongued yellow deal boarding, and 2 ins. by 2 ins. wrought and bevelled fillets in the angles.

Walls.—4 ins. by 3 ins. rough fir framing and braces, with 3 ins. by 3 ins., 3 ins. by 2 ins., and 2 ins. by 2 ins. intermediate studding; covered on the inside with asbestos fibrous plaster, and on the outside with 22 gauge galvanised corrugated sheet iron.

Partitions. — Rough studding as above covered on both sides with asbestos fibrous plaster.

Roofs.—Pitched at ⅛th of the span. Trusses, consisting of 6 ins. by 2 ins. king posts, 6 ins. by 3 ins. tie beams, 4 ins. by 3 ins. principals, and 4 ins. by 2 ins. struts, all wrought, framed, bolted and strapped together, fixed 9 to 10 ft. apart. On the trusses at 2 ft. centres are laid horizontally 3 ins. by 2 ins. rough purlins, to which are nailed 2 ins. by 2 ins. wrought raking pieces for securing the outside covering of 22 ins. gauge galvanised corrugated sheeting. The soffit of the roof is lined with asbestos fibrous slabs.

Windows.—Wrought, solid frames, heads and sills, rebated for 1⅜ ins. sashes and 1 in. glazing bars, splayed and rebated. The opening lights fall back inside into metal cheeks to form hoppers, and the greater part of the glazing is 21 ozs. sheet glass.

Doors. — External doors are wrought, framed, ledged, and braced, the panels filled with tongued and V-jointed boarding. Inner doors are wrought, square framed and panelled.

Heating.—The buildings are heated generally by upright cylindrical slow-combustion stoves, standing on sheet-iron hearths, and having iron flue pipes carried up through the roofs.

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Correspondence.

THE KING'S FUND FOR DISABLED OFFICERS AND MEN OF THE NAVY, ARMY, AND AIR FORCE.

To the Editor of THE BUILDING NEWS.

Sir,—You will, doubtless, have read in the press of the scheme the Minister of Pensions has recently launched, and of the appeal he has made on behalf of our disabled officers and men of the Navy, Army, and Air Force, and how thoroughly he has thrown himself into the whole matter. In his scheme it is noticeable how prominent the building trade is, as being a very suitable form of employment in one way or another for large numbers of our wounded and partially disabled heroes, and, in supporting the Minister in that part of his scheme which offers instruction to suitable men to learn a trade by which they may earn a livelihood, I am appealing to the employers in our great industry to make a donation towards the Minister's scheme, to be earmarked for men who take up any part of the building trade as the means of providing for themselves and their dependents.

I have consulted with the Minister, who cordially approves my action, and I feel that, by making a successful appeal to members of the building industry throughout the country, I shall be more than repaid for the time I have voluntarily devoted during the war to the interests of the great federation of which I have the honour of being a past president.

The King and Queen have made a handsome donation of £53,000, being the City of London silver-wedding present, to which his Majesty has added a personal donation of £25,000; this not only shows the King's sympathetic interest, but he has graciously consented to the Fund being known as "The King's Fund for Disabled Officers and Men of the Navy, Army, and Air Force."

I shall feel grateful if your readers will subscribe as liberally as the many other calls upon them allow, and help me to send to the Minister of Pensions such a sum as will place the building trades employers in the forefront of his list of subscribers.

Yours faithfully,
ERNEST J. BROWN.

c/o National Federation of Building Trades Employers of Great Britain and Ireland,
48, Bedford Square, London, W.C.1.
September, 1918.

Among the properties of Lord Mount-Edgcumbe to be put up at auction on the 25th inst. is the bold headland on the Cornish southern coast known as the Dodman. An effort is being made to prevent this fine site between Rame Head and the Lizard passing into private hands again. The National Trust for Places of Historic Interest or Natural Beauty is interesting itself in the matter, and we hope the property will be acquired as a public possession.

Lieutenant Charles Herbert Hartmann, A.R.I.B.A., Royal West Kent Regiment, was the younger son of Mr. and Mrs. Augustus Hartmann, of 14, Kensington Square, W.8 (formerly of Weybridge, Surrey). He was educated at Banstead and Charterhouse, afterwards studying architecture at the Ecole des Beaux-Arts, Paris, and with the late John Belcher, R.A., in London. On the outbreak of war he joined the Artists Rifles, and subsequently obtained his commission in the Royal West Kent Regiment. He was reported missing on July 2 last, and is now known to have been killed in action on that date.

Lieutenant Charles Richard Gerald Mitchell, Dragoon Guards, reported missing on April 1 last, and now unofficially presumed to have been killed on that date, was the youngest son of the late R. A. H. Mitchell. He was born in 1885, and on leaving Eton he went to Wye Agricultural College, where he obtained the agricultural prize, and subsequently became a member of the Surveyors' Institute. After a further course of training he was appointed agent for the Gloucestershire estate of Lord Elcho (now the Earl of Wemyss). He obtained a commission in the Dragoon Guards (Special Reserve) in September, 1914, and went to France in the summer of 1915, and, except for six months in England in 1917, was abroad till the time of his death. His elder brother, Lieutenant R. W. Mitchell, died of wounds received in action in November, 1917.

PROFESSIONAL AND TRADE SOCIETIES.

THE ARCHITECTURAL ASSOCIATION EVENING SCHOOLS.—The Architectural Association Evening Schools, which have been closed since the outbreak of war, will re-open with the commencement of the next Day School term, on Monday, September 30. Special facilities for study will be afforded for architectural students serving with his Majesty's Forces stationed in London, of which a number have already arranged to attend the schools. For full particulars, application should be made to the Secretary, The Architectural Association, 35, Bedford Square, W.C.1.

THE INSTITUTION OF MUNICIPAL ENGINEERS.—The tenth annual general meeting will be held at Southall, Middlesex, on Wednesday and Thursday, October 9 and 10, 1918. On Wednesday the programme is:—10.30, Adjourned Council meeting at Town Hall; 11.0, Assemble at Town Hall; 11.15, Reception by the Chairman of the Southall-Norwood U.D.C., Mr. W. Cantwell, J.P.; 11.30, Annual general meeting: Minutes of last meeting; presentation of annual report of Council; announcement of ballot for Council for year 1918-19; installation of President; any other business. Presidential address. The Secretary will present a contribution descriptive of the activities and growth of the Institution during the decade 1908-1918. 1.0, Adjourn for luncheon. After luncheon at 1 p.m., visits will be paid as follows: Messrs. Lowden's Lamp Works; view complete manufacture of electric incandescent lamps. Trade Waste Purification Works and Tin Salvage at Messrs. Tickler's Factory. Victor Tyre Works; inspect reinforced concrete building and view shell making. Arsenal new building; inspect reinforced concrete structure in progress, together with examples of "Belfast" roof trusses of from 50 to 100 ft. span, built up of short lengths of timbers. Open-air Swimming Baths. Council's Dock. Tea in the Manor House grounds at 6.15 p.m., and at 8 p.m. invitation smoking concert. On Thursday, October 10:—10.0, Meet at Hanwell Broadway (Tram Depôt); 10.15, Proceed to the Southall-Norwood Sewage Disposal Works (chemical precipitation combined with bacteriological treatment) and laboratory; Mr. J. H. Edmondson, F.C.S., chemist and manager of the works, will present a paper: "The Management of Small Sewage Disposal Works"; discussion. 12.0, Visit the Sewage Disposal Works of the Hanwell U.D.C.; 1.0, Luncheon at the Park Hotel, Hanwell; 2.30, Proceed to Southall by train; 2.45, Visit Maypole Margarine Works.

UNIVERSITY OF LONDON SCHOOL OF ARCHITECTURE.—The particulars of the coming session of the above include a description of the new building and the aims of the School. Six courses of study are provided, including the B.A. Degree Course (Honours in Architecture), the Certificate Course in Architecture, the Seniors' Design Course, a Certificate Course in Town Planning, a Diploma Course in Town Planning and Civic Architecture, and a Diploma Course in Town Planning and Civic Engineering. The Lecture Courses will be given by Professor F. M. Simpson, F.R.I.B.A., and Mr. Arthur Stratton, F.R.I.B.A., on the history of architectural development, and by Professor Elsley Smith, F.R.I.B.A., on Building Construction. The Manual Work, which each student is required to take in his second year, is under the direction of Mr. Goudie and Mr. Sprague. Particulars of work in the architectural studio, and drawing from casts, antique and life, are given, together with details of the Town Planning courses. The Provost and Professor Simpson are always ready to give information and advice to students or to their friends. The Provost or the Secretary may usually be seen between the hours of 10 and 4, or by special appointment. Professor Simpson may be seen on Wednesdays at 12, and at other times by appointment. Professor Elsey Smith may be consulted on Wednesdays at 3, and at other times by appointment. Many prizes and scholarships are offered.

Our Office Table.

Mr. D. Currie, Director of National Salvage, visited Edinburgh last week, and addressed a number of public authority representatives in the City Chambers. Indicating what might be done with ordinary town refuse, he mentioned that the total amount of refuse collected in a year was 9,450,000 tons. This refuse, it was found, was constituted as follows:—50.98 per cent. fine dust; 39.65 per cent. cinders; bricks, pots and shales. 5.35 per cent.; tin, 0.98 per cent.; rags, 0.40 per cent.; lead, 0.40 per cent.; glass, 1.61 per cent.; bones, 0.5 per cent.; vegetable matter, 0.72 per cent.; scrap iron, 0.06 per cent.; shells, 0.08 per cent.; paper, 0.62 per cent.; He emphasised the importance from a national point of view, of those different products which were regarded as waste. Major Leighton, of the Scottish Local Government Board, also spoke on salvage in relation to town refuse. Mr. J. C. Davis, technical adviser of the National Stlvage Council, said national salvage could be made profitable. In rags alone there was an annual value of 1¼ million. The value of bones lost, where such refuse was burned, was between £119,000 and £120,000. Paper was also an important item for salvage.

All architects know that it is generally the little defects which ultimately cause annoyance to clients. For instance, a flooded cellar causes endless discussion, because everyone occupying the building remarks on the absence of warmth. In some cases continual flooding will entirely rust through the boiler, making it useless after a few years. This was the case at the Beaumont Schools, Warrington, for the boilers connected with the heating apparatus were destroyed owing to the continual flooding of the stokehole for a period of eight years. The surveyor seriously contemplated filling in the chambers to above the flood height, but two months before the great war he decided to try waterproofed cement for the concrete in the floor and wall rendering. We have a recent report stating that the Pudloed cement treatment has produced a perfectly dry cellar during the four years which have elapsed since the work was done.

The memory of Peter Harrison, the architect of King's Chapel, Boston, Mass., has recently been commemorated by a dedicatory tablet, the gift of architects of the city. Harrison was an Englishman from Yorkshire, and was the first trained architect and builder of monumental edifices whom the eastern section of the new world developed. He settled in Rhode Island in 1740, and at once entered into architectural work, study of which he had completed in England.

The committee formed to present Mr. Sheriff-elect Banister Fletcher, F.R.I.B.A., with his souvenir chain of office has suffered a severe loss in the death of Dr. Freshfield, its chairman. Alderman Sir John Baddeley, J.P., vice-chairman, has been asked to take the position. The Shrieval chain consists of three rows of chains, composed of antique links, with an enamel badge in front of the City arms, and a pendant showing the arms of the Sheriff-elect. There are also enamel shields upon the chain representing the arms of the Institute of British Architects, together with those of the Inner Temple, and the Carpenters' Company; while at the back is a carved cipher showing the initials "F. W.," representing the Ward of Farringdon Within, of which the Sheriff-elect is a representative. It is noped that the presentation of the badge and chain of office will take place at Carpenters' Hall.

"It is well known," remarks the *Engineer*, "that, as a result of the disastrous conflagration that almost entirely destroyed the town of Salonica, of a necessity a great building era will open up as soon as hostilities are over, and the inhabitants will not be content with the same class of wooden shanty and dilapidated shacks that formerly did service for domestic dwellings. A superior and well-fitted residence will be wanted, and, therefore, there will be a heavy import of such articles for the building trade as furniture fittings and locksmiths' wares, including door-handles, door-

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THE BUILDING NEWS

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Currente Calamo.

Taking for granted the Fuel Controller's reiterated jeremiads about the scarcity of coal, the rationing order was evidently necessary. It becomes increasingly more and more evident, however, that in no similar case has the administration of the order been marked by more official blundering—not of the local fuel overseers, who, in London, at any rate as far as our experience goes, are most courteous and anxious to do their best, but the people responsible for the procedure adopted. The latest instance is the Timber Order, which fixes the maximum price for fuel wood at forty shillings a ton, leaving it quite uncertain whether the fuel is logs or unsawn wood. The price, moreover, is so high—equal to that of coal at £4 a ton—that the maximum is far too high. Before the Order was issued unsawn fuel timber could be bought in at least one home county for sixteen shillings a ton, and we fear the grower will get little of the rise, which, as usual, will be absorbed by the profiteer. Control of fuel timber will do little to reduce the demand for coal even in rural country districts, while the great towns, which burn most coal, will find, as usual, that so soon as the price of an article is fixed it disappears from the market.

As in our own time, the trade associations of workmen seem to have suffered long, long ago, at the hands of their officials, who abused their powers to further their own ends. In one of the pleasant, gossipy "Tabloid Talks" in *Building Industries*, an interesting instance is quoted as far back as the time of James the First of Scotland, when the Scottish Parliament enacted that ilk craft should have a "Deacon to be chosen by the craft with consent of the officer of the town for governing and essaying all works before the craftsmen of that craft. The power bestowed upon the Deacons was, in the course of a generation or two, so abused that an Act was passed in the reign of James IV. curtailing their power, and checking the improper statutes which they had enacted, namely, that wages should be paid for holidays as well as for other work days, and that no craftsman should end the work begun by another. The Deacons were suspended for a year, and the users of their statutes were punished as oppressors. Unfreemen and strangers took advantage of this Act to settle in the suburbs of burghs, and to commence business, and to work without the permission of the Deacons—which gave rise to so many complaints that apprentices ran away from their masters, and that these outsiders, not having to pay the burdens due by the burgesses, were enjoying the same privileges. Thus it came about that an Act was passed in the reign of James IV. forbidding all, except members of incorporations, from carrying on business in a burgh. This secured a monopoly of trade to the incorporations, and henceforward (till the Municipal Reform Act) no one could set up business as a wright, a mason, a baker, a tailor, a shoemaker, etc., without being a freeman of the burgh and a member of an incorporation. There was thus a monopoly within a monopoly—the burgh had the exclusive right to trade within a certain district, and the members of the incorporated trades alone had the right to ply their respective crafts within these burghs. Jealous of what they called their rights we find from their old minute-books that the members were as intent upon prosecuting strangers, or, as a worthy convener in Haddington used to call them, 'interlopiters,' as in watching over their apprentices and journeymen. In pre-Reformation times each craft had its patron saint, and contributed to the maintenance of an altar in the parish church. Many entries occur in the Haddington burgh records respecting the collection of the weekly pence for this purpose, and many of the fines imposed upon transgressing members are there mentioned as having been given for the upholding of the altar. The oldest document extant belonging to the Wrights and Masons records an arrangement entered into by the Incorporation and the chaplain of St. John's altar in Haddington parish church whereby the former became patron of the altar by entering into obligations to maintain it in all times coming, 'for augmentacion of God's service, for pleiser of ye gude toune and unite and concord between parties.'"

The building operations in the larger cities of the United States of America were much fewer in 1917 than in 1916, according to the United States Geological Survey. In sixty selected cities 199,738 permits were issued for buildings erected in 1917, a decrease of 70,044. The cost of these operations was $584,193,378 in 1917, as against $899,684,512 in 1916, a decrease of $315,491,134, or 35 per cent. The building operations in Greater New York cost $90,221,357, in Chicago $49,167,990, in Detroit $39,666,800, in Philadelphia $33,050,220, and in Cleveland $30,483,750. Of the sixty cities selected, forty-eight showed decrease and twelve showed increase. The decrease in Greater New York was $109,010,819, or 55 per cent.; in Chicago, $63,667,160, or 56 per cent.; in Detroit $11,401,510, or 22 per cent.; and in Philadelphia, $16,269,005, or 33 per cent. Waterbury, Conn., where the building operations cost $6,562,930, showed the largest increase—$2,292,930, or 54 per cent. The other cities that showed increase were Akron, Atlanta, Chester, Denver, El Paso, Hartford, Los Angeles, New Haven, Omaha, Sioux City, and Youngstown. Various reasons are given for these changes. The principal causes of decrease were the scarcity and high cost of material and labour. In some cities the cause of decrease was financial stringency. The causes of increase were local. In New Haven, for example, a great increase was caused by the erection of a large building for Yale University. For 1917 a total of 145 cities reported operations costing $687,415,605. For 1916 practically the same cities reported operations costing $1,024,211,675. Of the 145 cities reporting for 1917, 129 stated operations by classes of structures. The total cost of the buildings erected in them was $632,694,952. The part of this amount expended on wooden buildings was $168,290,958, or 27 per cent; on brick or hollow-tile buildings $322,147,677, or 51 per cent.; on stone buildings, $4,589,168, or less than 1 per cent.; on concrete buildings $66,511,300, or 11 per cent; and on steel skeleton buildings $58,440,361, or 9 per cent.

On an article written by Dwellings-Insp. Jahn, of Leipzig, in the *Deutsche Techniker-Zeitung*, of July 6 last, the editorial comment is that in view of the new Prussian Dwellings Law, which contemplates the increase of inspection, the views expressed should be of considerable interest. Although the necessity for dwellings is as

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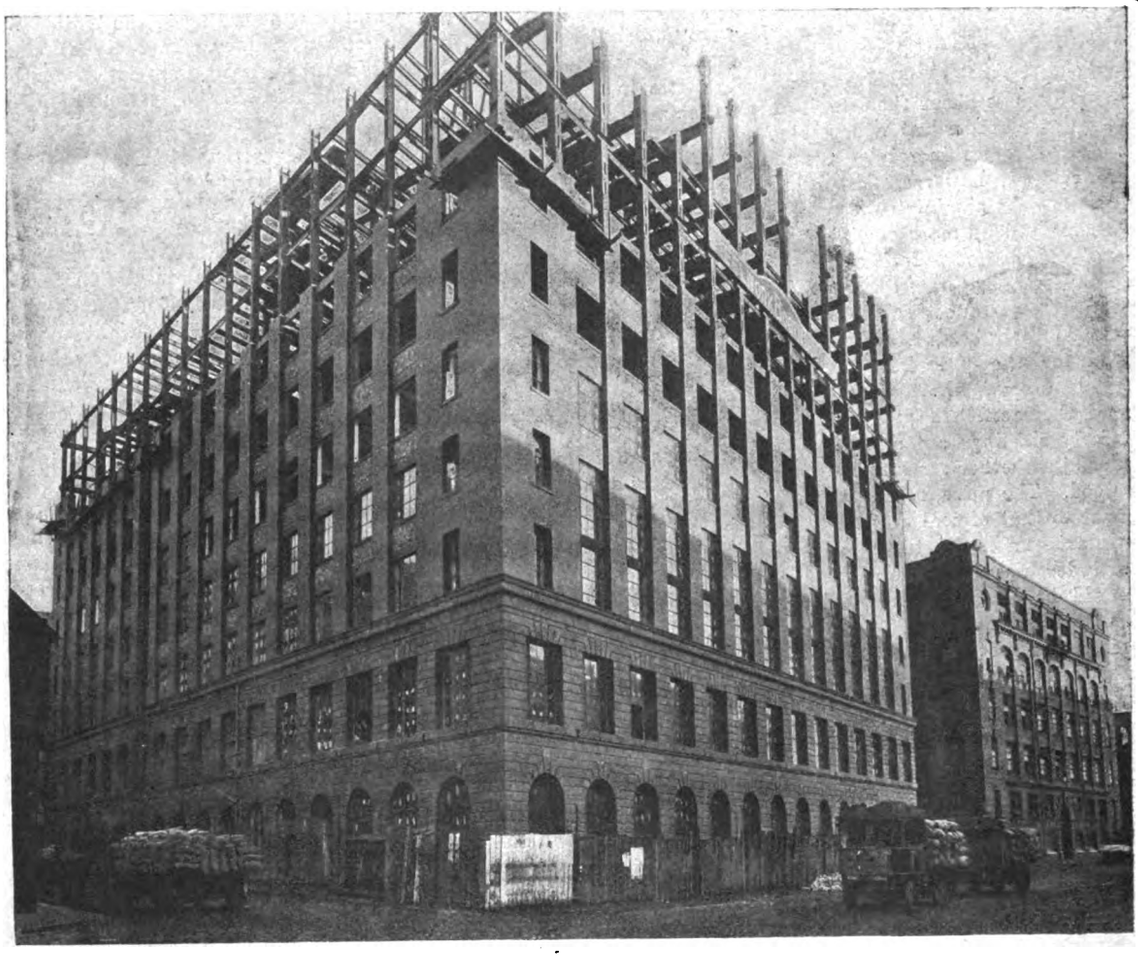
great as that of food, this has only been recognised by the German authorities within the last thirty years. The most unsatisfactory housing conditions occur in the large towns. About 80 per cent. of the population are unable to afford to pay the rental demanded for satisfactory housing accommodation. The author groups under five heads the lack of dwellings:—1. Lack of dwellings, especially those of small size, and therefore overcrowding takes place. 2. The dwellings are not built on sanitary lines; they are damp, flimsy, and dark. 3. Well-built dwellings are so badly maintained by the owners that they become defective. 4. Sound dwellings are used in a way contrary to health and morals. 5. Rents are too high, especially for large families, with the resultant subletting and other difficulties. The special duty of the author's department is to look after the dwellings and also the persons who inhabit them; but it should not become a branch of the police service, it must be a branch of the public welfare. Inspection of residences should be universal and compulsory. It would be unfair if inspection were limited to the dwellings of the poor only. In the case of large houses or business premises special care should be taken to see that servants and assistants are properly housed.

We are asked by a lady architect, who has already fully established the ability of her sex to work successfully as architects, whether any church has ever been built from the designs of a woman architect. Not in this country, to the best of our knowledge, but we believe in the United States there has, though we do not remember where. If we are wrong in either statement, perhaps some better-informed reader will correct us, and if the drawing of such a design exists we should be glad to publish it.

STEEL STRUCTURES.

Whatever form "reconstruction," so much talked about just now, may take here in connection with social and political matters, it is certain that, when peace comes, vast schemes of rebuilding will have to be carried out in Europe and the East with all possible speed consonant with stability and at not excessive cost. If Great Britain is to play her part in this work creditably, it is certain that competition between architects, builders, and engineers will be of far less benefit or moment than their collective effort to achieve results the accomplishment of which will test the energy and efficiency of all to a degree never before approached in the world's history. We are very glad, therefore, to welcome the lead taken by our friends the engineers, and to receive the first number of "Steel Structures," which is to be issued quarterly by their representative institution, the British Engineers' Association, of 32, Victoria Street, S.W.1, which has promptly organised a Structural Steel Section, which already counts as its members a number of the most active British steel builders, whose achievements in every part of the world in the construction of public buildings, factories, bridges, and the like, are famous as landmarks of engineering progress.

Many of these are illustrated and described in the issue of "Steel Structures" to hand, and we are promised in future numbers other examples of a similar kind. By the courtesy of the British Engineers' Association we are enabled to reproduce three illustrations of a combined mill and warehouse made and erected by Messrs. John Booth and Sons, of the Hulton Steel Works, Bolton. The first illustration given herewith shows the skeleton nearly completed. The others, which will be found with our general illustrations, show respectively the internal construction at the junction of the mill and warehouse, and the completion of the steelwork and the large main cornice, which projects 5 ft. from the outside face of the wall stanchions. The building is eleven storeys high, and there is a basement, so that there are, in addition to the ground floor, ten floors and a flat roof. The floors are constructed of 4½ in. brick jack arches on rolled steel joists, the haunches being filled with concrete to a thickness of 5 in. above the centre. It will be noticed in the illustration showing the internal construction that the mill portion is that of which the floor is not filled in, and the construction is shown of the floor beams and the stanchion connections. The same size of beam is used in the warehouse floors, but without the flange plate and web connections. Towards the top of the same illustration, on the right hand, are shown the stanchion joints, and it will be observed that these are riveted; this is the case throughout, so that all the stanchions



EXTERIOR VIEW OF TWELVE-STOREY MILL AND WAREHOUSE MANUFACTURED AND ERECTED BY MESSRS. JOHN BOOTH AND SONS.

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are made continuous from the basement to the ninth floor.

As pointed out by "Steel Structures," one outstanding advantage of manufacture for steelwork construction in buildings is that it is quite independent of local conditions. The structural parts are almost always manufactured in districts where materials and labour are economically obtainable, so that they may be transported to the site as finished articles in convenient parts, merely requiring assembly and erection into position. As only the finished article is carried, this mode of construction has a further advantage when compared with structures where gross quantities of materials have to be considered, involving the transport of the waste as well as finished materials.

It is generally admitted that for tall buildings, in which maximum floor spaces are required, steel construction is the only available method; while in buildings of all descriptions the internal rooms may be modified as often as desired without detriment to the main structure. For the workshop type of building, requiring long walls, which walls lack the stiffening effect and support of the cross walls found in ordinary buildings, a considerable saving in brickwork may be obtained by adopting steel stanchions at intervals.

The outside walls of a typical workshop building are 300 ft. long, 34 ft. high, and are only 9 in. thick. These walls are stiffened by stanchions of 12 in. by 6 in. of 44 lb. section, being fixed at 11 ft. centres. In similar cases within wide limits, no consideration need be given to the height of the walls, as the centres of stanchions can be taken for the height when using wall formulæ. Had an entirely brick construction been adopted in the instance cited, the lack of steel construction would have necessitated a thickness of 18 in. at the bottom of the wall.

In countries subject to earthquake shocks and districts in which subsidences occur, steel construction is undoubtedly better than any other type. It may be that if settlements are uneven the walls will crack and appear unsightly, but if due consideration is given to the beam attachments to stanchions, there is no fear of a general collapse, and only under very grave disturbances need even a local failure be looked for. Further, steel structures are certainly free from the stresses at the beam connections to stanchions which would inevitably occur from uneven settlement in a building of a continuous type.

In buildings subject to "hammering" action, such as paint manufacturing mills, printing works, oil cake mills, etc., it will be found that steel construction offers a ready and easy solution to almost all the difficulties.

It will be useful to many to mention that "Steel Structures" gives a series of extracts from the British Standard Specification for Structural Steel for Bridges, etc., and General Building Construction, which, while they do not, of course, include all the necessary provisions of a contract, will interest readers as yet not fully acquainted with the details of steel construction.

Mr. John Hill, land agent for the Croome Court Estate, Worcester, of the Earl of Coventry, completed fifty years in the position on September 7, when he celebrated his jubilee. A letter was read from Lord Coventry at the meeting, in which he congratulated Mr. Hill, and sent a cheque as a token of his esteem. Mr. J. Mytton, on behalf of 130 tenants, asked Mr. Hill to accept a purse containing notes and an address, with the names of the subscribers. The estate staff also presented Mr. Hill with a timepiece.

THE ENGLISH HOUSE FROM CHARLES I. TO GEORGE IV.*

This volume is a satisfactory supplement to Mr. Gotch's previous kindred works "The Growth of the English House" and "Early Renaissance Architecture in England." It deals lucidly with a period which, in regard to its comparison with that which preceded it, has raised much controversy between the admirers of the freshness, vivacity, and originality of the Elizabethan designers and their opponents, whose eulogies have been reserved for their successors. Mr. Gotch has spared us anything like a rechauffé of the old wrangle, and wisely preferred to present the domestic side of his subject in a sympathetic spirit. To that, in some measure, but more largely to his industry of research and literary aptitude, we are indebted for a work which will at once take its place, along with its predecessors, on the shelves of all capable of its appreciation. Still more, perhaps, will it be valued by the comparatively few who can follow its author's comparison of the different types and features of the dwellings of the time throughout the country, and one may perhaps hope that among the architects of the next decade, stirred into life by their participation in the great struggle of to-day, it may exert an influence that may arouse once more their inventive genius, and end the wearisome repetitions and adaptations of phases of style that have almost eliminated the interest derived from historical continuity.

Mr. Gotch starts in his introductory chapter with a brief review of the whole period dealt with, embracing the evolution of the modern house, the domestic arrangements of the Elizabethan time, when the great change from mediævalism took place, and houses were built for comfort and pleasure, and not seriously for defence. Then he traces the first signs of transition, and the gradual disappearance of Jacobean features, the growing predominance of the Classic style, and the sporadic efforts during the latter part of the eighteenth century to revive the late Gothic style. Next we get a tersely written chapter on the changes of style during the seventeenth century. That change, as he well reminds us, was a change of method of design as well. Hitherto design had been a matter of tradition, and impersonal, the result of a number of men working together each concerned with the portion affected by his particular trade. Probably some one individual controlled the general scheme, and oversaw the work of the rest, but in no such sense is he called the "architect" as we regard the architect of to-day. In the many books published for the guidance of designers during the reigns of Elizabeth and James the First the word is found now and then, but these books were addressed primarily to artificers, and only incidentally to architects, who, Mr. Gotch says, seem to have been included in order to catch a purchaser, the reason being that hardly any people called themselves architects. Not one of those books illustrates Gothic architecture. The great men who were building houses took to the Italian manner as a novelty, and the new fashion became popular. Housebuilders wanted the novel details in their houses, and the English workman had to do the best he could, with scanty knowledge and training. The book makers of the time saw their opportunity, and produced books to help the needs of the designers who wanted to work in the new Classic style. Thus that style was fostered at the expense of the native Gothic, and in no long time the operation of building began to be called architecture, and the only architecture of which there was current literature was Classic. Thus it came about in less than half a century people of "culture" stigmatised Gothic as barbarous, as Evelyn did in his "Account of Architects and Architecture," and as a "fantastic and licentious" manner of building. Meanwhile, few of the workmen studied these books, but their overlookers—the surveyors—bought them, and by their study, or by foreign travel, or both, grew familiar with Classic detail, and gradually gave the required design to buildings under their charge. Thus they grew to be architects, and architectural design became more personal, and its results less and less like a spontaneous growth of the land. From whatever cause, some of these men came to preserve their drawings, and, later on, to publish them Among these were Thorpe, Smithson, Inigo Jones, John Webb, Wren, and after them Campbell, Gibbs, and others, about whom Mr. Gotch has much of interest to say, enhancing the value of his remarks by some welcome reproductions of their designs.

Following a chapter dealing with Inigo Jones and his work, we get another about John Webb, and then a very interesting one on the transition in minor buildings and interiors. How gradual this was is obvious in the numerous buildings all over the country, and how limited in range was the influence even of such a master as Inigo Jones. Probably, as Mr. Gotch suggests, throughout the seventeenth century architectural design followed two paths: one trodden by trained architects, the other by less learned designers, whether architects or, as of old, masons and artificers, who either had not mastered the niceties of Classic design or who clung to old features, such as the mullioned windows, and the gable, as very distinctly shown in the Pepysian Library of Magdalene College, Cambridge, where the mixture of mullioned windows, gables, and Classic details at a time, or thereabouts, when John Webb was drawing nothing but Classic buildings, and St. Paul's was rising above ground, is significant enough. Other attempts to weld Jacobean and Classic design into one consistent whole are quoted and illustrated, such as Stanway House, Gloucestershire; Swakeleys, near Uxbridge; and Burford Priory, Oxfordshire, built by Speaker Lenthall, subsequent to his acquirement of the property in 1634. Who the designer of the last was is not known, but his attempt to solve old problems in new ways was, as Mr. Gotch says, consistent throughout and successful. Besides all this, it must be remembered, as Mr. Gotch reminds us, that the general character of houses had greatly changed during the period between the accession of Charles I. and the Restoration. The old idea of the mediæval house-plan was to provide a great hall for the daily use of the whole household, supplemented by a group of rooms at one end for the use of the family, and at the other, another group for the use of the servants. As the custom of dining all together died out, the great hall was deserted as a living room and became merely a vestibule leading from one group of apartments to the other. For the sake of architectural effect, sacrifices of comfort had to be made by the servants, who were relegated to a basement by day and to the attics by night, while the ground floor and that above it were reserved for the use of the family and for State occasions. The general tendency was to increase the sub-division of duties and the general convenience of arrange-

(Continued on page 216.)

* "The English House from Charles I. to George IV." By J. Alfred Gotch, F.S.A., F.R.I.B.A. (London: B. T. Batsford, Ltd. 30s.)

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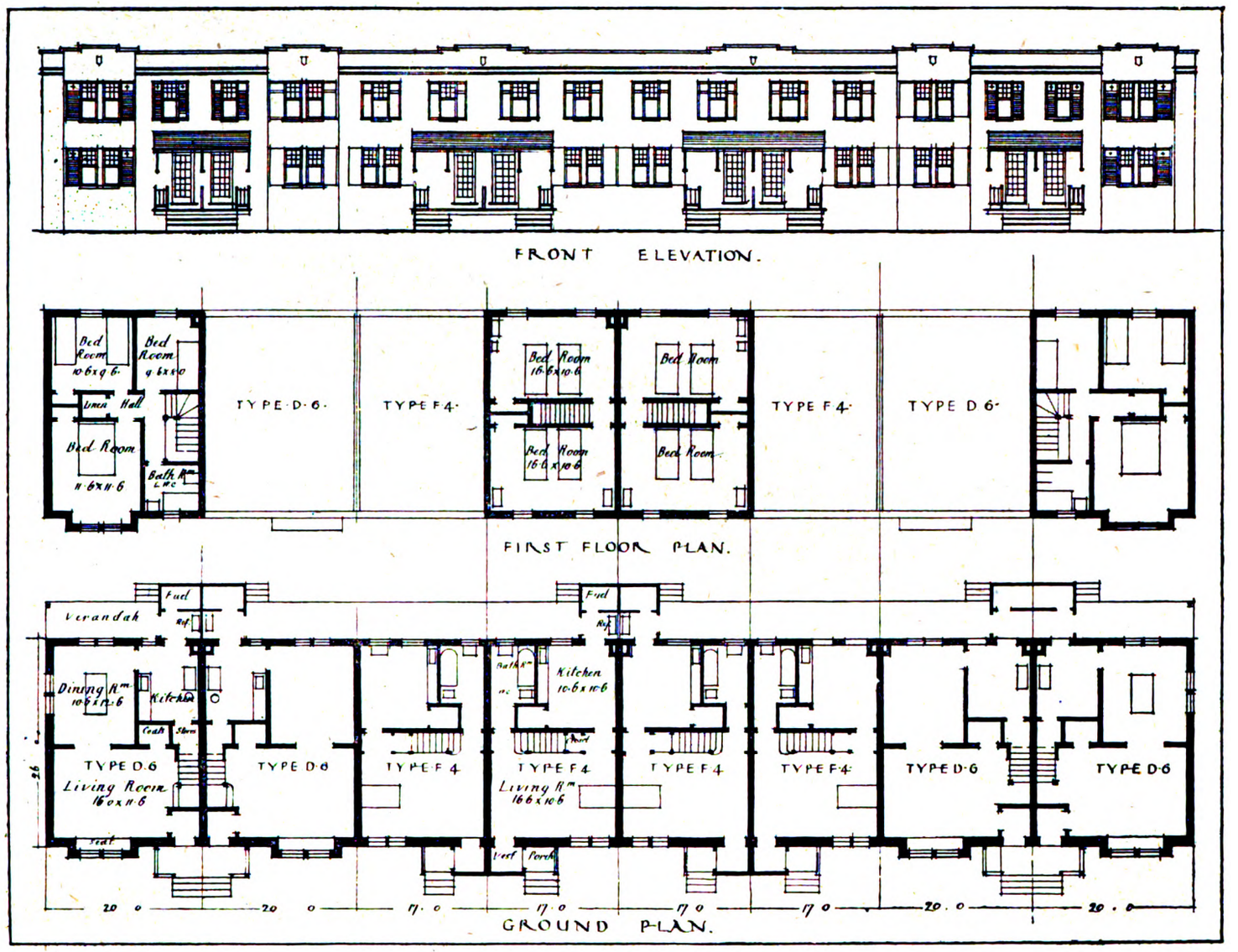

A QUEBEC HOUSING SCHEME AT DONNACONA.

Mr. J. Cecil McDougall, A.R.I.B.A., Architect.

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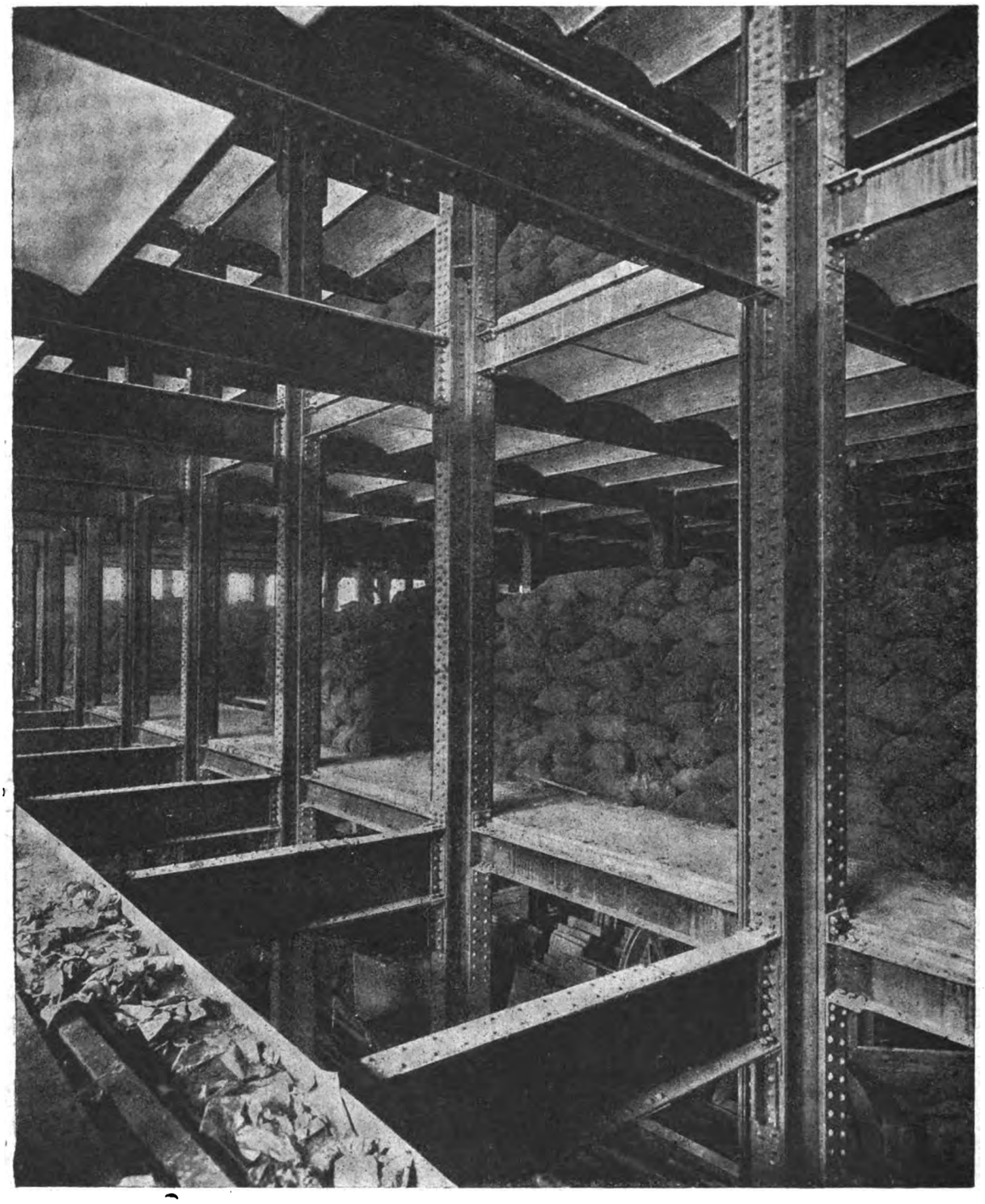

STEEL STRUCTURES: A 12-STOREY WAREHOUSE IN COURSE OF ERECTION.
Note Riveted Connections. Manufactured and Erected by Messrs. John Booth and Sons.

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NEW ROOD SCREEN, RATTLESDEN CHURCH, SUFFOLK.—Mr. G. H. Fellowes Prynne, F.R.I.B.A., Architect.

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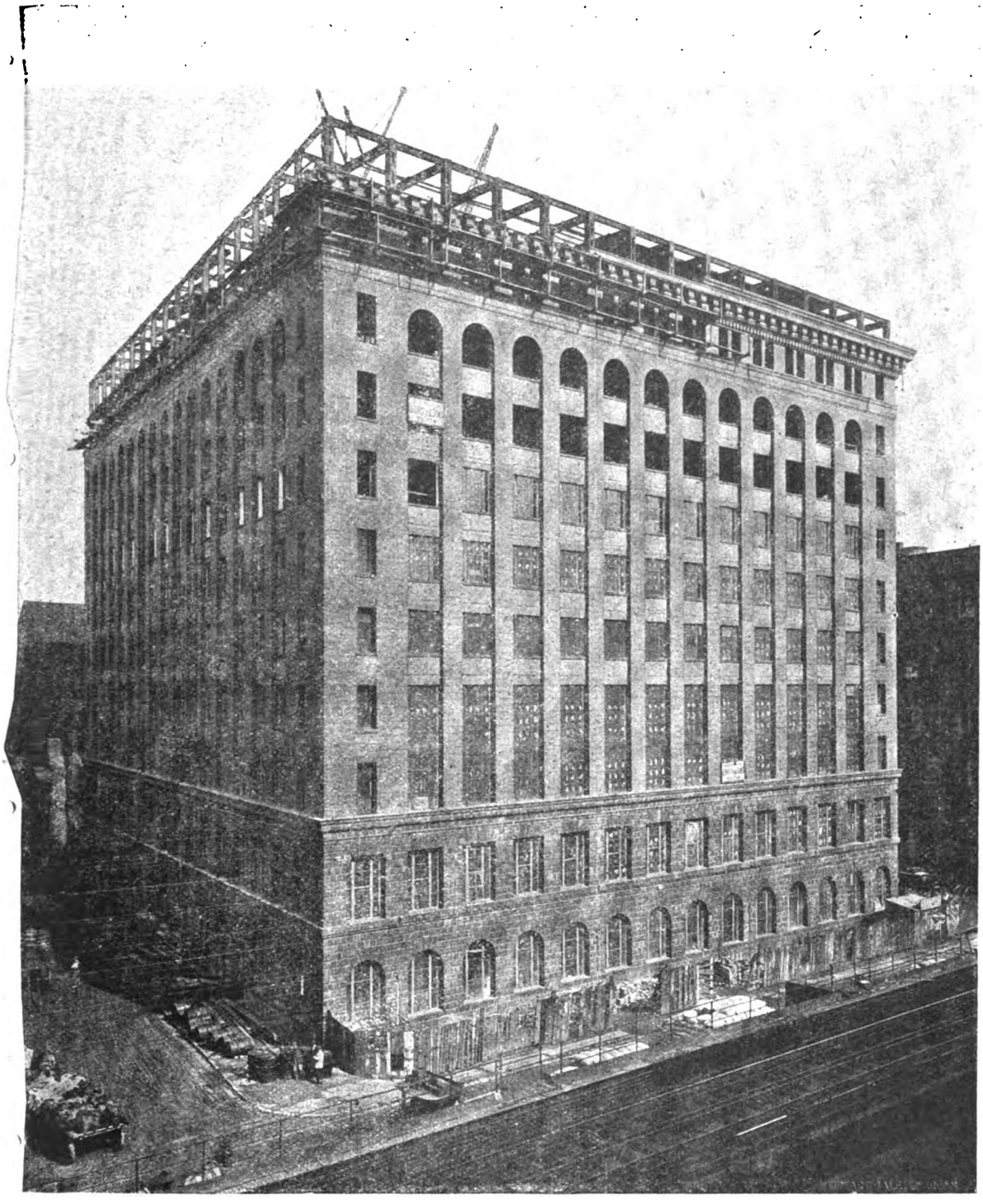

ANOTHER VIEW OF THE 12-STOREY MILL AND WAREHOUSE.

Note Cornice, which projects 5 feet.

Weight of steel, 5,500 tons. Manufactured and Erected by Messrs. JOHN BOOTH and SONS.

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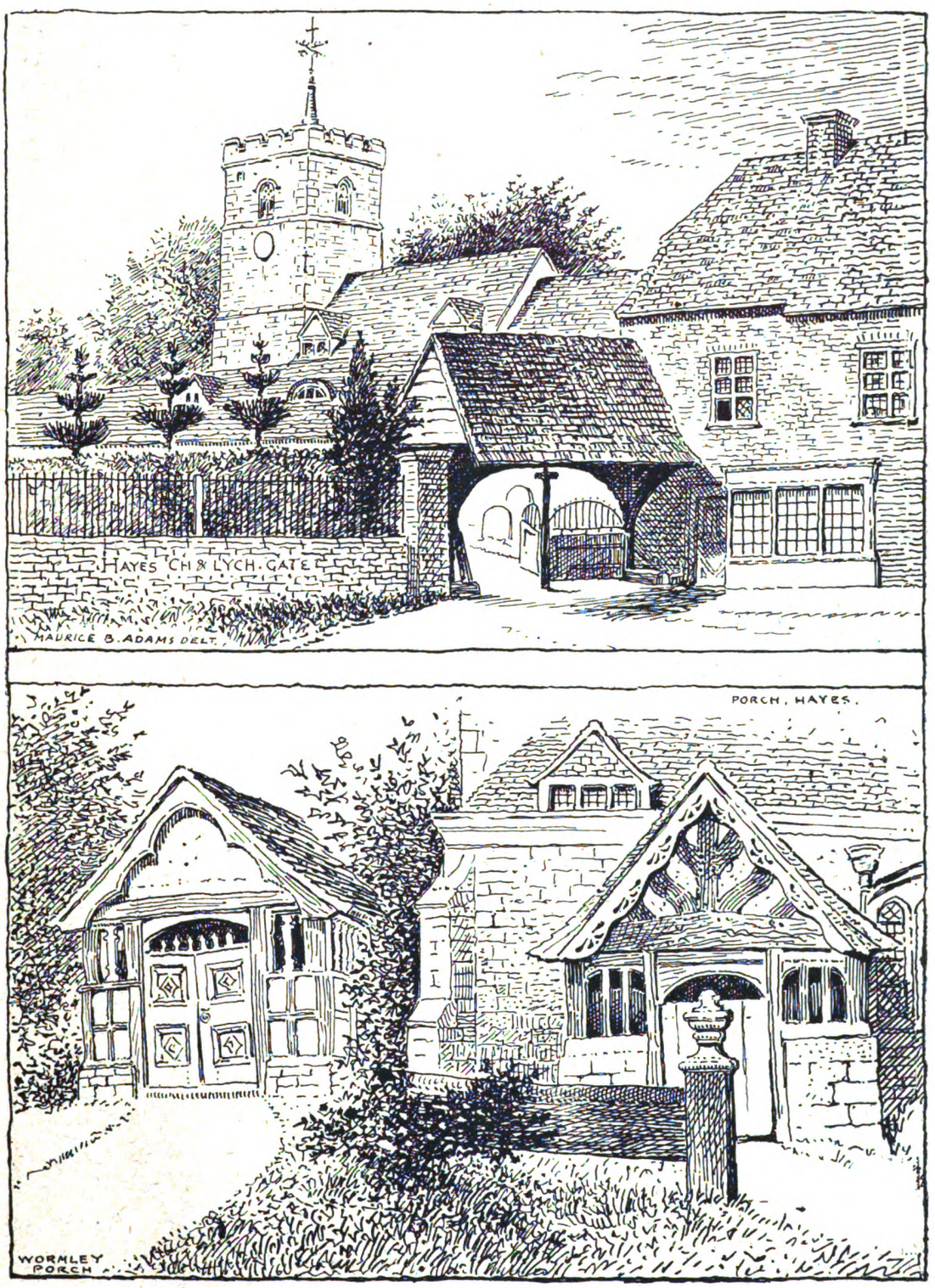

SKETCHES OF OLD TIMBER-WORK BY MAURICE B. ADAMS, F.R.I.B.A.:

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THE ENGLISH HOUSE FROM CHARLES I. TO GEORGE IV.

(*Continued from page 205.*)

ment, making at the same time special provision for State occasions in the principal rooms. Concurrently, the external appearance of the houses changed even more than their plans. It was more compact than of old, but less picturesque; more regular and dependent largely on its proportions and scholarly detail, which gradually ousted the naive design of the Jacobean craftsmen, although we still find here and there the survival of some of the quaint mixtures and growths, such as the strapwork *motif*, which we are apt to regard as Dutch, of which Webb made use, and even Inigo Jones himself did not disdain to incorporate into some of his chimney-pieces.

Chapter VI. is devoted to Sir Christopher Wren, of whom so much is known that naturally little that is fresh could be added. That which follows is principally concerned with Sir Balthazar Gerbier, whose little book gives him his best claim to mention in connection with architecture, but abounds in malicious and egotistical touches. He is said to have designed Hamstead Marshall, Berkshire, more probably the work of his pupil Wynne, or Winde, who is also credited with old Buckingham House, built later, in 1705.

The ampler material available naturally renders the succeeding chapters of the book, which deal with the great houses and gardens of the eighteenth century, Georgian houses, and the smaller houses, town houses, and the decoration and interior features of eighteenth century houses, its most informative and interesting portion. Whether in the selection of his examples, or as regards the broad-mindedness of his comments, we can once again congratulate Mr. Gotch on the success he has achieved. At the present time his book should be of real service, and we commend it to the study of every architect during his present enforced leisure, that when the busy time comes, as it must soon, he may remember the most obviously true of Mr. Gotch's concluding warning, namely, that the worst mistake in house building is the sacrifice of comfort and convenience for the sake of appearance. His final words are well worth quoting:—

"The vast increase in population during the last two hundred years has accentuated the division of the course of design into two streams; one directed by the highly trained architect, the other by the workman trained only in the use of his tools and the knowledge of his materials. Could the two streams be brought into one channel they might flow on into ideal conditions. But the very complexity of modern life has a tendency to resolve itself into the simplicity of specialisation.

"Since the beginning of the eighteenth century the course of domestic architecture has been conditioned partly by the nation becoming too large and complex to admit of a single expression in national architecture; partly by the tendency common to all the parts to pass into excess in one direction and into tenuity in the other. A wider outlook over the civilised world, a greater knowledge of the achievements of foreign countries, led inevitably to the disappearance of a truly national style, such as that we call Gothic. On the one hand the homes of the wealthy grew in splendour and in fidelity to theories of architecture expounded in books, with the result that use and convenience were largely subordinated to grandiose efforts. On the other hand, richness of architectural thought declined in smaller houses through the stages of dignity and comfort down either to a consistent plainness of character or one only marked by individual caprice. Such caprice, schooled by a study of bygone styles, led to the eclectic initiativeness of the nineteenth century. But the last twenty years have seen many signs of a new beginning. Based upon national needs, and striving after beautiful expression, domestic architecture is slowly progressing on lines characteristically English. Sooner or later this movement will accelerate, and will eventually reach heights as great as those upon which we now look back with admiration and delight. Architecture, like other arts, is immortal; the qualities of proportion, ornament, and fitness can never long be disregarded, for no building is quite complete which is not beautiful to look upon."

We should not omit to mention that in a brie appendix a few interesting notes are given about Sir Roger Pratt, who built Clarendon House for Lord Chancellor Hyde, and Horseheath, Cambridgeshire, for Lord Allington. A man of means and culture, he seems to have been one of the men whom the great fire of London led into the pursuit of architecture, in which his interest was much more than that of an amateur, although he seems to have subsided into the life of an ordinary country gentleman after his marriage at the age of 48, with the exception of the building of his own house at Ryston, which still remains. He left, however, a series of notes which would fill many pages, and from which Mr. Gotch gives some extracts, by the courtesy of his descendant, Mr. Edward Roger M. Pratt, of Ryston Hall, Norfolk.

Our Illustrations.

NEW ROOD SCREEN.—RATTLESDEN CHURCH, SUFFOLK.

The Church of S. Nicholas, Rattlesden, is amongst the finest and most beautiful of Suffolk churches, but being some miles away from the railway is not generally so well known as other churches of the county. It is chiefly noticeable for its excellent proportion, its charmingly designed and finely cut flint ornament, and carved oak work in the roof. Unfortunately the original rood screen and lower screen surrounding the south chapel were destroyed in the seventeenth century, but from small portions of the base of the former the general character of the carved work was evident, while the doorways leading from the wall staircase to the top of the chapel screen and from there to the rood loft gave clear evidence as to the original levels. In the new rood screen the architect, Mr Geo. H. Fellowes Prynne, F.R.I B.A., has endeavoured to keep, in the main, to both the character and proportion of the original screens. Our illustration is taken from a photograph exhibited in the Royal Academy, which is an enlargement from an amateur full-plate negative. The work was carried out from the architect's design by Messrs. Martyn and Co., of Cheltenham. The screen is of oak, and the figures are in a lighter coloured wood, which makes them stand out most effectively. Both the rood and chapel screens were given as a memorial by the Rev. E. J. Wild, when Vicar of Rattlesden, in conjunction with other members of the Wild family.

STEEL STRUCTURES: A TWELVE-STOREY MILL AND WAREHOUSE.

A description of this twelve-storey mill and warehouse, manufactured and erected by Messrs. John Booth and Sons, of the Hulton Steelworks, Bolton, will be found in our article on page 204.

SKETCHES OF OLD TIMBER WORK.

There is not much to say about the suggestive subjects given by the accompanying sheet of sketches, but they serve to show the quality which more than often gives a charm to the village carpentry done in this country before tradition gave way to modern conditions. The porches and lych gates are all similarly direct in their constructional unpretentiousness, though in parts their dates differ probably. All historic specimens of craftsmanship more or less gain in interest owing to the alterations which necessarily happen as time goes on, and doorways and gates, perhaps, are more liable to change than most other features. Hayes Church chiefly depends upon its picturesque character and variety of period, though Sir Gilbert Scott did the building up during the reign of Victoria and rather modernised the interior.

A QUEBEC HOUSING SCHEME, DONNACONA.

The pulp and paper companies in the province of Quebec, according to the *Contract Record*, have done, and are doing, a great amount of work in the direction of supplying good houses for their employees. One of these, the Donnacona Paper Company, Ltd., of Donnacona, P.Q., is now erecting several types of cottages, from plans by Mr. J. Cecil McDougall, A.R.I.B.A., architect, Montreal. The houses, which are intended as a renting proposition, are built in terraces of eight houses, consisting of four six-room cottages and four four-room cottages, with a central heating plant located in the basement of one of the houses. Each room is equipped with a radiator of the usual type, the heat being controlled at the will of the tenant. The heating is under the charge of the company, its cost being included in the rent. The chief advantages are more efficient and economical heating, and the saving in capital cost by the substition of a large heating apparatus for eight small furnaces.

The six-room cottages measure 20 × 26 ft., and the four-room cottages 17 × 26 ft., in addition to which there are gardens in the front and rear of each house. Each cottage consists of two stories. The foundations are of concrete, the exteriors of stucco, and the interiors of plaster. The floors are of hardwood. The roof is flat, of tar and gravel, with central draining. The cottages are planned so as to give the maximum of convenience, and both types have some features in common. Thus each has porches and vestibules, and long verandahs in the rear. In the six-room cottages, the vestibule opens into the living-room, which is 11.6 × 15.6 ft., and has a bay window with a window seat over the radiator. The dining-room adjoins, and has direct communication with the kitchen, which is provided with built-in dressers and a store-room; convenient to the kitchen and at the rear are refrigerator space and fuel shed. The upper storey consists of three bedrooms (two double and one single), bath-room, linen cupboard, and closets off each bedroom. The largest bedroom is 13 × 11.6 ft. The bath-room contains a closet, bath, and basin.

The four-room type has a vestibule leading into a living dining-room, 16.6 × 10.6 ft., and has direct connection with the kitchen, 10.6 × 10.6 ft.; off this are the refrigerator and coal accommodation and also the verandah. The bath-room is on the ground floor. Two bedrooms are placed on the upper floor, each having closets. Each bedroom measures 16.6 × 10.6 ft., and is provided with two windows.

The Ladies' Guild of the British and Foreign Sailors' Society, and others, are endeavouring to raise the sum of £50,000 for the erection of a Sailors' Rest and Boys' Hostel for the Port of London.

The Worcester Education Committee have decided to enter into provisional arrangements with the county education authorities for the erection of a girls' secondary school, at an estimated cost of £40,000.

At Bere Ferrers Station, Devon, on September 24, 1917, ten New Zealand soldiers were accidentally killed on the railway. The villagers have erected in their historic church, where Drake once worshipped, a memorial tablet, with the New Zealand coat of arms and a fern leaf, and an inscription commemorating the event.

A correspondent writes:—Mr. J. R. Mann, A.M.I.C.E., who has died in his ninety-first year, was the eldest son of Mr. John Mann, for many years in charge of Buckingham Palace gardens and the London parks. Mr. J. R. Mann was trained in the offices of the London builder, Thomas Cubitt, and in his youth, was engaged upon the erection of the St. James's Park front of Buckingham Palace. In 1856 he was appointed surveyor of works on the Osborne estate, and held that position for thirty-five years. His last work was the design and erection of the new wing to Osborne House, containing the Durbar Room, in which the Jubilee presents are displayed.

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Correspondence.

THE HOUSING PROBLEM: CONDENSATION ON CONCRETE.

To the Editor of THE BUILDING NEWS.

Sir,—The American Concrete Institute is doing good in publishing a warning on condensation, for it is not well known that concrete is subject to condensation when the air is wet or humid, and that a non-porous concrete is subject to more condensation than a porous concrete. For instance, a weak concrete of broken brick aggregate will have proportionately the same porosity as the porous brick itself. We all know that brick walls when plastered with lime mortar are seldom subject to condensation.

Interior plastering will, however, prevent condensation on any sort of concrete. I have spent many pounds and much time in experimenting with various plaster mixtures to find the most absorptive plastering material. I found that a good method is to flo- on the interior of the concrete walls with ordinary plasterer's lime and sand mortar (about three of sand to one of lime), lightly keyed in the usual manner to receive the final setting coat. This three-plus-one coat must be left until strong pressure from the thumb makes no impression. It may be necessary to leave it for several days, according to the weather. The finishing coat of lime putty, sand, and plaster of paris may then be applied with safety. Immediately before this latter coat sets, it should be finished with a soft-hair brush which produces a granular surface—a further method of absorbing moisture.

The finishing coat is known in some districts as "Plasterer's Skimming." It is also known as "Limed Plaster." The proportions depend on the quality of the lime; which varies in different districts. I discovered the best, easily obtainable, skimming for absorption was the following. It gives a good finish, sets well, and works quickly:—

3 parts of lime putty or chalk lime.
6 parts of washed sand.
1 part of plaster of paris.

Instead of making dense concrete for walls, it is much cheaper and more hygienic to use a very porous concrete, and to render it with a cement-waterproofed exterior coating, for the fiercest driving rain cannot penetrate a ¾in. Pudloed cement rendering. Porous concrete, like all porous materials, has also the quality of retaining the heat engendered in the room, thus giving a warmer dwelling. Thus, porous concrete has the dual advantage of assisting the absorption of condensation and of conserving heat.

I shall be pleased to hear from any person who is interested in my investigation into the effect of the absorption of various plastering materials.—Yours faithfully,

J. H. KERNER-GREENWOOD.

King's Lynn.

TEMPERATURE TESTS ON CONCRETE COLUMNS.

SIR,—We have read with very great interest the article in your valuable paper of the 18th inst. on temperature tests on concrete columns, and as the conclusions reached show the necessity of reinforced concrete columns being effectively insulated to protect them from damage by excessive heat created by a fire, we think your readers will be interested to know of "Slagbestos" (McNeill's perfected patent slagwool, "Lion" brand) for this purpose.

"Slagbestos" is a pure mineral fibre, and is not only incombustible but has most extraordinary efficiency as a non-conductor of heat, or insulator, and when it is desired to protect ferro-concrete columns or beams from damage by heat, no other material will form such an effective protection as "Slagbestos."

Without trespassing too far on your valuable space we might just give you particulars of one test carried out by the British Fire Prevention Committee when fire reaching a temperature of 1800° F. was applied to a ceiling protected with a layer of slagwool of about 1½ in. thickness, for one hour, and at the conclusion of the test the wooden flooring over the ceiling was uninjured, and at no time did the temperature of the flooring exceed 90° F.

To any of your readers who are interested in further details we shall have much pleasure in giving fuller information.—Yours faithfully,

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London, E.C.2.

TRADE AND COMMERCE.

Sir,—On the 4th inst. you were good enough to publish a somewhat lengthy letter on the above subject from the Federation. That the public is greatly interested in the matter is apparent from the many letters I have received.

May I hereby inform all interested in the iron, steel, tinplate, and metal trades that membership of this Federation is vital in their own interests as well as in that of the community generally?

It is not sufficient to belong to any general or a local association. Government officials play one association off against another. Only by combination of all interested in these trades (as apart from other trades) can any consideration from Government be obtained.—Yours faithfully,

C. T. EVENNETT, Secretary, British Federation of Iron, Steel, Tinplate, and Metal Merchants (Inc.).
5, East India Avenue, E.C.3.

LADY ARCHITECTS AS CHURCH BUILDERS.

Sir,—I am writing a paper on "Architecture, as a Profession for Women," and would like to know if any church has been built from the designs of a woman architect.

If you do not happen to know yourself, may I ask if you would be kind enough to publish the query in your journal?

Yours faithfully,
Miss B. A. CHARLES, A.R.I.B.A.
September 17, 1918.

BUILDING TRADE EXEMPTIONS.

A NEW ORDER.

The order of the Minister of Munitions dated April 9, 1918, exempting workmen employed in the building trade from Section 3 of the Munitions of War Act, 1917, has been revoked, and in its place a new order has been issued providing for the exemption from the section of all persons engaged in manual labour on building work on the ground that the circumstances of their employment are such that the provisions of the section ought not to apply to them.

"Building work" in the order means:—

(a) The construction, alteration, or repair of works of construction and buildings for naval and military purposes, and of buildings in which munitions work is or is intended to be carried on.

(b) The erection of houses for the accommodation of persons engaged or about to be engaged on munitions work.

(c) The construction, alteration, repair, or maintenance of docks and harbours and work in estuaries in cases where such construction, etc., is certified by the Admiralty to be necessary for the successful prosecution of the war.

(d) The erection of buildings required for the supply of light, heat, water, power, or tramway facilities in cases where the Minister of Munitions certifies that such supply is of importance for the purpose of carrying on munitions work.

(e) The construction, reconstruction, alteration, repair, decoration, or demolition of buildings, railroads, docks, harbours, canals, embankments, bridges, tunnels, piers, and other works of construction and engineering in all cases in which such construction, etc., is munitions work or work in connection therewith

It is stated that the North Wales Heroes Memorial Fund will provide for a memorial chapel and a range of new science buildings at the University College, Bangor.

Our Office Table.

A second edition of "Coast Erosion and Protection," by Ernest R. Matthews, A.I.M.E., etc., is published by Charles Griffin and Co., Ltd., at 12s. 6d. net. Two important subjects are dealt with in fuller detail viz., the effect upon the travel of sand and shingle of the seaward projection of piers, and the action of waves on harbour breakwaters and piers, the study of which is so necessary in dealing with many coast erosion problems. Two additional chapters are devoted to these subjects, and other additions and improvements are introduced.

Near to the modern Catholic church of St. Swithin, at Gillmoss, is the ancient chapel in which Charles X. of France, when Duc d'Artois, worshipped during his many visits to England. It is approached through a courtyard, and it is now a dismantled and whitewashed barn, a derelict shadow of its historical past. Father Wilfrid Carr, the rector of the church, has now its restoration in contemplation, though there is one interesting relic which he may not be able to replace. For years it contained the humble bench which the Duke, when the guest of the Seftons at Croxteth Hall, occupied when he went to the chapel, and which was called the "King of France's seat." In the modern church a bench is so described, but it is not, however, the original.

In *Beton und Eisen* of July 4 last, the author describes the influence of temperature upon the measurements of extension of a concrete girder bridge. The cross section of the bridge (of 12.2 m. span) shows it to consist of a deck without any projecting ribs below the arch and with parapets or side walls formed solid with the decking. The reinforcements consisted of a group of 10 bars of iron 31.75 mm. dia. at each side and 18 bars 12.7 mm. in the decking; the parapets had no reinforcement. The tensile extensions under load are shown in the form of graphic curves; with a load of 92.5 tons the tensile stress upon the iron reinforcement was 822 kg./cm² (about 5.2 tons per sq. in.) with the full load of 280 tons the tensile stress upon the iron reinforcement was 1,645 kg./cm.² (about 10.4 tons per sq. in.), which, after remaining there for 20 days, had risen to 1,793 kg./cm.². The results of compression tests of the surface of the concrete in the parapet walls are also shown graphically; the greatest compression under the maximum load was 0.279 mm.

An enthusiastic gathering of members of the National Association of Local Government Officers (Rochdale and district branch) recorded on Saturday week their regret at the impending departure of Mr. S. S. Platt, borough surveyor, from the town, and as a mark of their esteem presented him with an attaché case. Mr. J. E. Holden, president was in the chair, Mr. S. Boothman (borough treasurer) made the presentation, and others who spoke to Mr. Platt's qualities as an official of local government, as a member of the association, and of his many other interests were Mr. Yarwood, who fills the vacated post temporarily, Mr. J. W. Stott of the overseer's department. Mr. Platt was humoriously reminiscent in his reply. During the evening an enjoyable musical programme was contributed by Misses J. Taylor and Marie Ingham, Messrs. F. Coupe, J. B. Stewart, Nadin, C. F. Dowd, and F. Evans, accompanist.

In Painters' Hall to-day Dr. W. E. S. Turner, director of the Department of Glass Technology, and Secretary of the Society of Glass Technology, of Sheffield University, will address the members of the Glaziers' Company on the future opportunities of the glass and glazing trades. During the forthcoming session practical classes will be held, as usual, under the Company's auspices at the Trades Training Schools, Great Titchfield Street. These classes are open to craftsmen and other students who anticipate following as a means of livelihood the art of stained glass in any of its branches, such as glazing, glass painting and designing, and offer a thoroughly practical training. Further particulars may be obtained from the Clerk, Mr. Percy W. B. Tippetts, 11, Maiden Lane.

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LEGAL INTELLIGENCE.

FALSE COMPANY RETURNS.—At Bow Street Police Court last week Mr. Garrett had before him the adjourned summonses against the Maccabean Land Co., Limited; Empire Builders, Limited; New Lydenburg Minerals Exploring Co., Limited; Transvaal Northern Estates Co., Limited; Zwartland (Transvaal) Land Co., Limited; Transvaal Exploring Land and Mines Co., Limited; and Transvaal United Trust and Finance Co., Limited for failing to furnish particulars to the Registrar of Companies, to give full and accurate information respecting the nationality of origin of one of the directors—Henry Samuel. There were also adjourned summonses against "Heyman (known as Henry) Samuel," of Gloucester Terrace, Paddington, charging him in respect of each of the companies named with permitting default to be made in furnishing the particulars required concerning his nationality. Mr. Purchase appeared for the defendant companies, and Mr. Frampton for Samuel. Mr. Frampton said he had advised his client that he had in law no answer to the charge. Mr. Samuel, therefore, would plead guilty. Mr. Samuel was a Jew and had no German blood of any description in his veins. Mr. Burrows, who appeared for the Board of Trade, in reply, mentioned a letter written by the defendant in which he stated that if the Germans had carried out his father's views in certain matters Poland would by this time have been completely German. Mr. Garrett said the defendant had undoubtedly made a statement that his nationality of origin was British, whereas in fact it was not. It was also clear to him that that statement was made deliberately, and it must have been put forward for some purpose. His claim because he was a Jew to be of no nationality was one that had never been admitted by any country. He was born in Germany and owed allegiance to Germany unless he had got rid of that obligation by naturalisation elsewhere. On each of the seven summonses he must pay a fine of £100, and would also have to pay 25 guineas costs, a total of £726 5s. With regard to the summonses against the companies, as the latter had been misled by Mr. Samuel into making the incorrect returns, he would order each company to pay only a fine of 20s. and five guineas costs.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

BURTON-ON-TRENT.—For tramway depot extension works, for the town council:—
Building work, Hodges, G., and Son, £1,519; ferro-concrete work, Lumbrick and Co., £603.

GLASGOW.—For installation of electric lighting at Garngad housing scheme, for the town council:—
Allan, Arthur and Ure.

LEEDS.—For excavations and concrete work in connection with extension of electricity works, for the corporation:—
Airey, W., and Son .. £19,997 0 0
(Recommended for acceptance.)

WELTON.—For painting the waterworks at Welton, for the Skegness Urban District Council:—
Steele, J. £39 2 6
(Accepted.)

YIEWSLEY.—For the improvement of the pathway in St. Stephen's Road, and painting the front of the Council chamber and cottages, for the Yiewsley Urban District Council:—
Wilkinson, W. J., £34 10s. and £7 10s. (accepted).

As a war memorial, plans have been prepared by Sir Charles Nicholson for the erection of a chapel in the parish church at Grimsby.

LIST OF TENDERS OPEN.

BUILDINGS.

Sept. 28.—Masons', joiners', and plumbers' work in erection of communal kitchen in Stainland Road, West Vale, Yorkshire.—For the Greetland Urban District Council.—Arthur T. Longbotham, Clerk, 4, Carlton Street, Halifax.

ENGINEERING.

Oct. 4.—Supplying and erecting, at the Stuart Street, Manchester, generating station, high and low pressure steam and feed pipework and supports, including alterations to existing pipework, No. 1 boiler house.—For the Electricity Committee.—Specification on application to F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.

SANITARY.

Sept. 25.—Sewer extension of about 500 yards of 9-in. pipe sewer, manholes, etc., at Coulsdon.—For the Coulsdon and Purley Urban District Council.—E. J. Gowen, Clerk, Council Offices, Purley.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

Lieut. Walter R. Johnston, R.F.A. (killed), was the sixth son of the late Mr. John Johnston, farmer, Balgray, Dundee. Lieut. Johnston was thirty years of age. He joined the R.F.A. in 1915, and subsequently received his commission. He had been in France for two years. An architect by profession, he was for some time assistant to Mr. Joseph Murray, Dryburgh, factor to the late Earl of Camperdown, and latterly held an appointment in the Lands Valuation Department, Inland Revenue Office, Edinburgh.

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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

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OUR ILLUSTRATIONS.

War Memorial Cross, Holy Trinity, Winchester. Mr. Paul Waterhouse, M.A., F.R.I.B.A., Architect.

Rebuilding of the Messenger Inn, Buckinghamshire. Messrs. Sidney V. North and C. Collas Robin, FF.R.I.B.A., Architects.

Gretna and Eastriggs Housing Scheme, near Carlisle. General plan; a type of cottages in detail and plans, elevations, and sections of the institute and shops. Mr. Raymond Unwin, F.R.I.B.A., Director of the Housing Branch of the Explosives Department of the Ministry or Munitions.

Currente Calamo.

The Coal Controller's tardy intimation that he is extending the period of rationing coal, gas, and electric light from the close of September to the end of October is some indication that the realities of the situation are at length being officially apprehended. But the alteration will exasperate the great majority, who have so very carefully saved their gas, and in some cases have used none at all, since July 1, on the understanding that gas saved in one quarter could be used in the following quarter or quarters. Such an alteration in the date now looks as though the public have been tricked, because the alteration favours those who have gone on using gas *ad lib.* just in the usual careless way. No reasonable citizen has doubted the reality of the coal shortage, or the need for every one doing his utmost to meet the national necessity for the strictest economy in fuel and light during the coming winter. The difficulty has been the hindrances placed in our way by the Coal Controller himself and his existing staff, the members of which cannot write clear English. The complicated forms will be responsible for the breakdown, if it comes; and until that fact is realised at headquarters even the present postponement of compulsion may result in disaster. Not a few people, ourselves included, are still puzzled to know if the Coal Controller really wants to save *coal*. A request to the Gas Light and Coke Company to remove a stove on hire at our private abode was followed by a visit from an inspector, who contended that it was *coal* that it was desired to save. How this can be, when, asking for only two tons, we were told the lowest limit with which we could be credited, whether we burnt it or not, was two and a-half tons, as against gas and electricity, we really do not understand.

The presentation of his chain and badge of office at Carpenters' Hall last Friday to the new Sheriff, Mr. Banister F. Fletcher, F.R.I.B.A., F.S.I., and the announcement of a concurrent presentation of a pearl necklace to Mrs. Fletcher, was a very pleasant function. The hall was crowded, and the loud and hearty cheers which greeted the recipient, and the references to the past services of himself and his family, notably of his late father, our own constant contributor through many years, and fellow-worker in more than one good work of his time, emphatically testified to the esteem in which all are held. The Master's opening address was a model of terse and fitting English, and if Sir John Baddeley was a little prolix, his paternal admonitions and congratulations were manifestly heartfelt, and his little mistake with regard to previous Carpenter Sheriffs was fittingly corrected by Mr. A. Charles Knight, C.C., F.R.Hist.S., who reminded his hearers that a very well-known Carpenter of his time, Sir John Cass, had served as Sheriff. The new Sheriff, who was admitted to office last Saturday, heartily and humorously acknowledged the presentation. We are not altogether sympathetic with his self-satisfaction that although as Sheriff he was "the common hangman," he had, like most Sheriffs before him, succeeded in appointing a perfectly competent Under Sheriff to relieve him of that part of his work. There are some people we should rather enjoy hanging just now, including our British Bolshevists and their fellow-conspirators with Hun prompters; but if a little extra work is wanted we are as sure Mr. Fletcher will come to the aid of his substitute as that he will excellently discharge all his other obligations, and subsequently those of the successively higher Civic offices which we confidently and hopefully expect to see him fill.

A meeting of the Manchester Royal Infirmary Old Sites Committee was held on September 24 at the Town Hall, Sir Chas. Behrens presiding. The meeting was a private one, and at the conclusion the Press representatives were informed that the following resolution had been unanimously adopted:—"That inasmuch as the Art Gallery Committee and the Libraries Committee have now definitely decided that their requirements cannot be met by the erection of a combined building, the Council be recommended to abandon altogether work comprised in the conditions of particulars of competition issued on January 4, 1911, and to direct payment to Messrs. Crouch, Butler, and Savage—the authors of the selected design for the erection of a proposed library and art gallery on the Royal Infirmary old site—of the sum of 500 guineas, being the balance of the premium payable to them in accordance with terms of the competition under which such design was submitted." If this resolution be adopted by the Manchester City Council the scheme for a building in which an art gallery and a reference library would be combined will be abandoned.

The local papers seem to think that it is probable that the Council, when the resolution of the Sites Committee is submitted to it, will give a pronounced lead in favour either of placing a new art gallery there or of reserving the site for a building in which to house the books of reference. Meanwhile, there is an elaborate and ambitious scheme on the tapis in connection with the building of the art gallery, including the provision of a memorial to the officers and men of all the East Lancashire regiments and other branches of the service who have fallen in the war. It is also suggested that outside the proposed building, and in front of the main entrance, a war memorial should be placed. Councillor F. Todd, chairman of the Art Gallery Committee, told a *Manchester Guardian* representative last Wednesday that his proposal was to set up a "temple of peace" on the Infirmary site—a building which would suitably house all the city's art treasures and provide a noble memorial to the fighting men of Lancashire. Mr. Todd wants to call the central portion of the building the "Hall of Peace," and in it, in addition to the regimental memorials, to place the war trophies which were promised Manchester by the London War Museums Committee. The site under this proposal would need to be extended on the Parker Street side, and part of it could then be used for the combined art gallery and war memorial, and the rest be laid out in gardens. All very fine and large, but we incline to believe that after the way Manchester has stultified itself in the past architects will be slow to respond to any participation in another abortive competition!

A builder, somehow or other, fixed a stove in the wrong house. On finding out his mistake he tried to get it back, but the tenant refused to let him come in and take it away. Such are the bare bones of a very pretty problem for the lawyers, if the parties want to spend their money

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on the matter. As briefly reported, the magistrate told the builder who begged his advice that the stove being fixed to the freehold, he did not think it could be removed, and, anyhow, if there was a remedy, it would be in the County Court. Now, the Law of Fixtures is a weird and wonderful mystery; but it does not seem to come in here, nor do the magic words "fixed to the freehold" quite apply. For, although stoves, ranges, etc., are nowadays fitted in when houses are built, and so become fixtures belonging to the freeholder, as landlord, yet any tenant can put in a new stove of his own, and he can also take it away before or when leaving if he makes good and replaces the old one. There are two classes of fixtures—landlord's and tenant's—and a stove supplied by a tenant can be removed by him before he gives up possession. But here a stranger fitted a stove by some mistake, and now wants to get it away. If the tenant keeps the stove and so gets the benefit of it, he should be liable to the builder in an action for its cost. So the builder must go to the County Court and try his luck. In Equity a mistake of fact can be set right, and upon proof of the facts the judge would be able to give judgment either that the builder could take away his stove and make good; or that the tenant who kept the stove and used it should pay its cost. Yet, if the landlord steps in and claims it as his fixture there may be trouble, and the good old law about things fixed to the freehold can come up again. Anyhow, the builder cannot safely remove it without the consent of landlord and tenant, nor would he be wise to trespass upon the premises for that purpose. A full report of the facts would be interesting.

A "Plea for National Kitchens," by Dr. W. E. Whyte, district clerk and treasurer for Hamilton, and director of the National Kitchens Division for Scotland, reaches us from the Ministry of Food, in which a scheme of town-planning with the communal kitchen as the basic idea is urged. To what extent this will prevail we do not know, but architects and builders likely to be concerned will do well to be ready to make the idea a success by the incorporation of up-to-date cooking apparatus and plans likely to facilitate distribution. It is obvious that requirements will differ according to the needs of the people catered for. In the villages and small towns most of the food will be carried to the homes, while in the large towns it will be consumed on the premises, and mostly at the ordinary meal hours, by big crowds, and little be done at other times. The ordinary caterers, as in London, will, of course, be hostile, as it will, we hope, end the extortion of high prices, especially at some of the tea-shops, where a loaf sold in the ordinary way for 9d. is cut up for table service into sixteen penny portions, and other viands are similarly high-priced. But their day is probably nearly over if the National Kitchen becomes a permanent, well-managed institution, as we trust it will.

We are glad to see that the Royal Automobile Club, in co-operation with the Scapa Society, has issued a pamphlet, which may be had on application by all interested. It is high time that local authorities took steps to enforce the provisions of the Advertisements Regulation Act, and insisted on the removal of some of the blatant hoardings, which almost everywhere, owing to the recent ravages of wind and weather, more than usually disfigure the countryside and strew the streets in the suburbs with tons of paper wantonly wasted. We may remind local authorities that the powers and provisions of the Act are enforceable only by by-laws which must be confirmed by the Home Secretary; and that the local authorities who can make by-laws under the Act are municipal boroughs and also urban councils in England having a population exceeding 10,000. In Scotland the town council of any Royal, Parliamentary, or police burgh are empowered to make such by-laws, whilst in Ireland the council of any urban district exceeding 5,000 may do so. In rural districts and in urban districts in Great Britain and Ireland, having a less population than those stated, the county council is the authority which is empowered to obtain by-laws under the Act.

HUN HOUSING.

Behind-hand as we are here with housing, and much as our arrears are due to the hindrances caused by Government interference, it is evident that the situation is far worse in Germany than here. But it is also apparent that, at least in some States, the need is being grappled with in a more business-like fashion than by our own rulers. The *American Architect* has had access to a series of reports from the Consular agents of the United States Government which are of considerable interest.

The position in Germany was summarised recently in a memorial addressed by the National Association of Commercial Employees to various German legislative bodies. It stated:—

Germany in the last fifty years has changed from being a preponderantly country-dwelling people into a nation of town dwellers. Even before the war, the housing question was becoming acute. The increase in population demanded a regular yearly supply of 200,000 dwelling houses, 75 per cent. of which were small houses; but since the war, building activity has been at a standstill. During the war, many families are sharing houses, but they will wish to go into houses of their own when peace is signed; there will also be frequent moves from large to smaller houses. Rents must inevitably rise, and the families with many children will suffer most. All that has been done so far toward remedying the existing evils is a drop in the ocean, and a comprehensive system of Imperial housing reform is required.

Again, the situation in Berlin, which may be taken as typical of the position in larger towns, was described in a speech delivered recently by the Director of the Statistical Office at Schönberg, in which he stated:—

The number of houses standing empty in the 46 communes of Greater Berlin in the period from May, 1916, to May, 1917, has diminished from 32,145 to 24,812, and is still falling. Soon after the end of the war, 20,000 dwelling houses will be required by soldiers' wives who have no home at present. At least another 20,000 will be wanted for the men who have postponed marrying until after the war. Then there will be a considerable number of single men returning who had their own houses before the war. Besides this, account must be taken of the increase of the normal demand from the young men who have grown up and from the influx of newcomers, so that in Greater Berlin during the first peace years there will be at least 60,000 dwellings required which will afterwards increase by 20,000 every year. This demand cannot be met by emergency expedients, such as the use of garrets and basements, old railway carriages, and barracks. The only method is to build new houses on a large scale.

In order to deal with the difficulty, the representatives of the municipalities and districts of Greater Berlin have, according to the *Berliner Tageblatt*, decided to bring about an amalgamation of the municipalities and communal associations. Previous to this it was proposed to reopen the municipal housing bureau which was closed at the end of 1914, but this was found impracticable on account of the lack of labour and material.

The first legislative step in Germany has been taken by Prussia, where a housing law came into force on April 1. Summarised, it is provided that:—

This act opens up a field of new activity for the State and communes in the matter of welfare work and housing measures. It makes new provisions for the acquisition of building land. Special attention is paid to the need of small and moderate-sized dwellings, and the so-called "Communal building prohibition" is confirmed by the act. In order to meet the need of such houses and to improve the sanitary conditions of such houses, and to improve the sanitary conditions of building quarters, blocks of dwelling houses and such like, the necessary ground and sites may be expropriated until December, 1926. Communes with more than 10,000 inhabitants are bound by law to inspect the houses and institute a housing office. The act finally settles that the sum of 20,000,000 marks will be put aside by the State for public benefit building purposes.

Careful consideration, it would appear, is being given as to the certainty of a pronounced shortage of building materials, and the urgent necessity to set the building materials industry going again is foreseen. Among the means of accomplishing this it is decided that there should be timely discharge from the army of labourers necessary for this work, to facilitate which the following general instructions have been issued:—

The building materials set free by the army administration are to be given at reasonable prices to those communes where a shortage of houses exists.

Since, in spite of the quantities of building materials thus made available there will probably during the first few months after the war not be sufficient to meet the demand, care is emphasised that all buildings should be erected as far as possible in the order of urgency.

In order to provide accommodation at once for the homeless, suitable residential hutment colonies should be generally established within suburban zones in the vicinity of railway stations, and so arranged that to each dwelling should be attached a vegetable garden, and, if necessary, sheds for poultry, rabbits, etc.

Immediately after the conclusion of peace a commencement must at once be made for the provision of sanitary, suitably furnished, permanent small dwellings as far as possible of one story only.

In places where a shortage of houses is to be expected suitable cheap building land must be provided and opened up, and this must be facilitated by making available landed property belonging to the State.

Building plans should be prepared for all the more important types of small dwellings, e.g., leasehold and freehold houses, houses for families of one, two or more members, houses for large families, detached houses, houses in terraces, houses for colonies, houses with a garden and sheds, corresponding to the building usages in the various Federal States and Provinces. The building regulations for small and one-storied dwellings should, as far as may be possible, be freed from

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all conditions tending unnecessarily to increase their price, e.g., directions as to the breadth of streets, building materials, thickness of walls, height of rooms, staircases, precautions against fires, etc.

In the lists of the men first to be discharged from the Army at the end of the war, the employees and workmen necessary for the erection of dwelling houses should be included.

In addition, efforts to encourage building are being made by the publication of orders relaxing the building regulations in various parts of the Empire. One order emanating from the War Office is addressed to the twenty-nine sub-offices of that department. It permits the resumption of building operations during 1918, and states that "wherever a serious shortage of houses exists, and its removal appears urgent, building operations are to be warmly supported and building materials released." The order further provides that building operations on houses which have already been begun may be continued.

With regard to the very important question of providing workmen, the order states:—"The necessary labour for removing the shortage of housing accommodation will be provided by the Substitute and Labour Department. It is to be taken from 25 per cent. of the labour in the building industry now available, and also from the ranks of those builders who are being slowly released from their employment on war buildings."

A second order was directed recently by the Prussian Minister of Agriculture and the Prussian Minister to the competent authorities, and provides that timber suitable for building purposes from Government forests may be sold on generous terms to the communes and public utility associations and companies for providing housing accommodation, especially emergency buildings, such as barracks, etc., on conditions that its employment for this object is assured.

In the meantime a merry war is being waged between the landlords and the tenants of Greater Berlin. Both sides have organised and are holding meetings at which their grievances are discussed and resolutions asking for Government aid are adopted. The landlords demand the limitation of the functions and powers of the special boards appointed by the authorities to handle cases of disputes over rents involving soldiers' dependents, the abolition of the rule compelling them to make a reduction of about 25 per cent. where the soldiers' family is assisted by the municipality, the abolition of the ordinance protecting the tenants, and a general rise in rents of at least 25 per cent. The tenants call the present regulations for their protection inadequate, and ask the Commissioner of Housing to issue an edict limiting rent increases to from 5 to 15 per cent., according to circumstances, and providing against notices to move until two years after the conclusion of peace. While the landlords insist that their carrying charges and all other expenses have gone up enormously during the war, thus making rent raises inevitable, the tenants declare that the raises they propose would be ample to meet all these increases.

Contrary to the general impression, the German authorities have not taken very drastic steps toward protecting the dependents of the Kaiser's soldiers from the clutches of their fellow countrymen in the shape of landlords, and the Berlin papers are filled with accounts of wholesale evictions and stories of soldiers' wives wandering from house to house vainly seeking quarters for themselves and their little ones.

EVERY DAY THINGS IN ENGLAND.*

Possibly a little above the heads of the boys and girls for whom it is primarily written, this volume will interest all who desire that better appreciation of the good things of English everyday life in the past may be followed by the desire to construct them in the spirit of our forebears, of which the fruit was real usefulness and genuine beauty, and not the shams and frivols which are the outcome of the artificial life of our own time. The first part, now published, deals with the period beginning with the Norman Conquest, and ending with the close of the Gothic age in the 15th century. The second, which is to follow it, will take its readers on from the 16th century to the close of the 18th. Mrs. Quennell's contribution to the work is marked by the same deftness as a portrayer of figures and costumes which has earned for her such well-deserved appreciation, and Mr. Quennell's reputation as a practical architect and author guarantees accuracy and freedom from the errors of fact and the mawkish sentiment mostly characteristic of children's books of the kind. There are eighty-six illustrations, and five plates in colour showing the development of costume.

The chief merit of the book is that it is not merely descriptive, but that a consistent and intelligible effort is made to explain why forms of things were evolved and adopted, and how such things as ships, mills, churches, clothes, and the like were built and made. And the details are not mere fruits of the imagination, but carefully collated from such good sources as the chronicle of Jocelin of Brakelonde, Doomsday Book, Froissart, Chaucer, and many manuscripts.

As far as possible, the same Things have been illustrated in each chapter—castles, knights, dress, houses, games, household scenes, and so on—so that readers can easily trace their development through the centuries; and in each chapter there is a historical chart which links up the work done with the people who did it. There are illustrations of the ships the Normans came in, the castles they built, and the monasteries where, through all this stormy time, the monks endeavoured to keep alive civilisation and culture. Much attention has been paid to the development of the house and its furniture, and many illustrations are given. In the great hall is depicted a mediæval banquet, with its curious dishes, its mummers and minstrels; and included also are men, women, and children of various ranks at work and play.

With such a book as this—we fear the price at which it is issued will not facilitate its inclusion as a school book—the study of history would be real and beneficial, and the children would be fascinatingly familiarised with the daily life of their predecessors of the past. But every teacher should get a copy, at any rate, and it should be found in every school of art library.

Mr. J. Johnson, assistant surveyor of Gateshead, who has been in the service of the Council for upwards of twenty-three years, has resigned, having received an appointment under the Ministry Department of Works and Buildings.

Mr. Richard Humphreys, surveyor to the Ruthin Rural District Council, who joined the army about eighteen months ago, has been wounded in France, and is now at Birkenhead Hospital. The clerk has been directed to write to him conveying the council's sympathy.

* "A History of Every Day Things in England." Part I. By Marjorie and C. H. B. Quennell. (London: B. T. Batsford, Limited. 8s. 6d. net.)

EFFECT OF MOISTURE REABSORPTION ON COMPRESSIVE STRENGTH OF AIR-DRIED TIMBER.

It is well known that the removal of moisture from timber by seasoning improves the strength, hardness, stiffness, etc., but it is not so well known that timber reabsorbs moisture, and that the strength is thereby decreased—a matter of importance in certain cases, as, for example, for timber used in roofs and floors of laundries and dye-houses.

A set of experiments are described which were made to ascertain the rate of absorption and the reduction in compressive strength. The wood used was cut from 4-in. planks of yellow pine and Douglas fir, and was kept for six months in the laboratory, when the moisture content was found to be from 6 per cent. to 8 per cent. The test pieces were 2 in. by 2 in. and 8 in. long, and some were exposed in a saturated atmosphere at 120° Fahr., and others in fresh water at 70° Fahr. for various periods of time. Plotted results show the depth of absorption for various times from 1 to 24 hours and give the percentage of moisture absorbed, showing that the moisture penetrates rapidly at first but not more than about 1½ in. One of the conclusions arrived at is that "timbers subjected to the action of saturated air at 120° Fahr. must be designed on a basis of constants determined from tests on green timber." Compressive tests with an Olsen machine were made and plotted on a moisture percentage base. In the case of Douglas fir the strength dropped from 8,000 lbs. per square inch at 6 per cent. moisture almost proportionately to 4,500 lbs. at 24 per cent. moisture. In the case of yellow pine, two curves are given, one in which the strength drops from 10,000 lbs. per square inch at 7 per cent. moisture to 5 800 lbs. at 13 per cent. moisture, and another curve at which the strength was 7,200 lbs at 14 per cent. moisture and dropped to 4,500 lbs. with 22 per cent. moisture. The greater reduction of strength shown by the first curve was due to exposure of the timber to moist air at 120° Fahr., which, it is believed, led to softening of the resinous substance. The second curve shows the effect due to immersing in water at 70° Fahr. The final conclusions arrived at are:—

"In the air-dry condition with approximately equal moisture contents the compressive strength of hard pine is about 25 per cent. greater than that of Douglas fir.

"When exposed to air saturated with water vapour at 120° Fahr. and when immersed in fresh water at 70° Fahr., the moisture reabsorption of air-dried wood is greater and more rapid in the case of fir than in the case of pine.

"The temperature effect on strength decrease is of more importance on pine than on fir.

"Pine shows a more rapid decrease in strength with the moisture increase than does fir. (The more rapid reabsorption by fir tends to offset this effect when the time element is used as a basis, so that for a given time of treatment the pine remains the stronger, although the strengths tend to approach each other with more extended treatment.)

"For moisture contents above 11 per cent. when due to reabsorption from air saturated at 120° Fahr., the fir is stronger in compression than is the pine. The same relation appears for moisture contents greater than 20 per cent. when due to soaking in fresh water at 70° Fahr."—H. Cowdray, *American Society of Mechanical Engineers, Journal*, May, 1918.

The pumping station at Garrion Bridge in connection with Motherwell's new water scheme for supplying water to the public works has been formally opened. The scheme, the estimated cost of which is £50,000, of which £15,000 is being paid by the Government and £12,000 by the public works interested, was sanctioned by a Provisional Order in April last. Under the scheme water is pumped from the River Clyde at Garrion Bridge up to the existing Motherwell water tank at Waterloo and taken from there to the various works by separate pipes from those which carry the domestic water supply to the town from Coulter.

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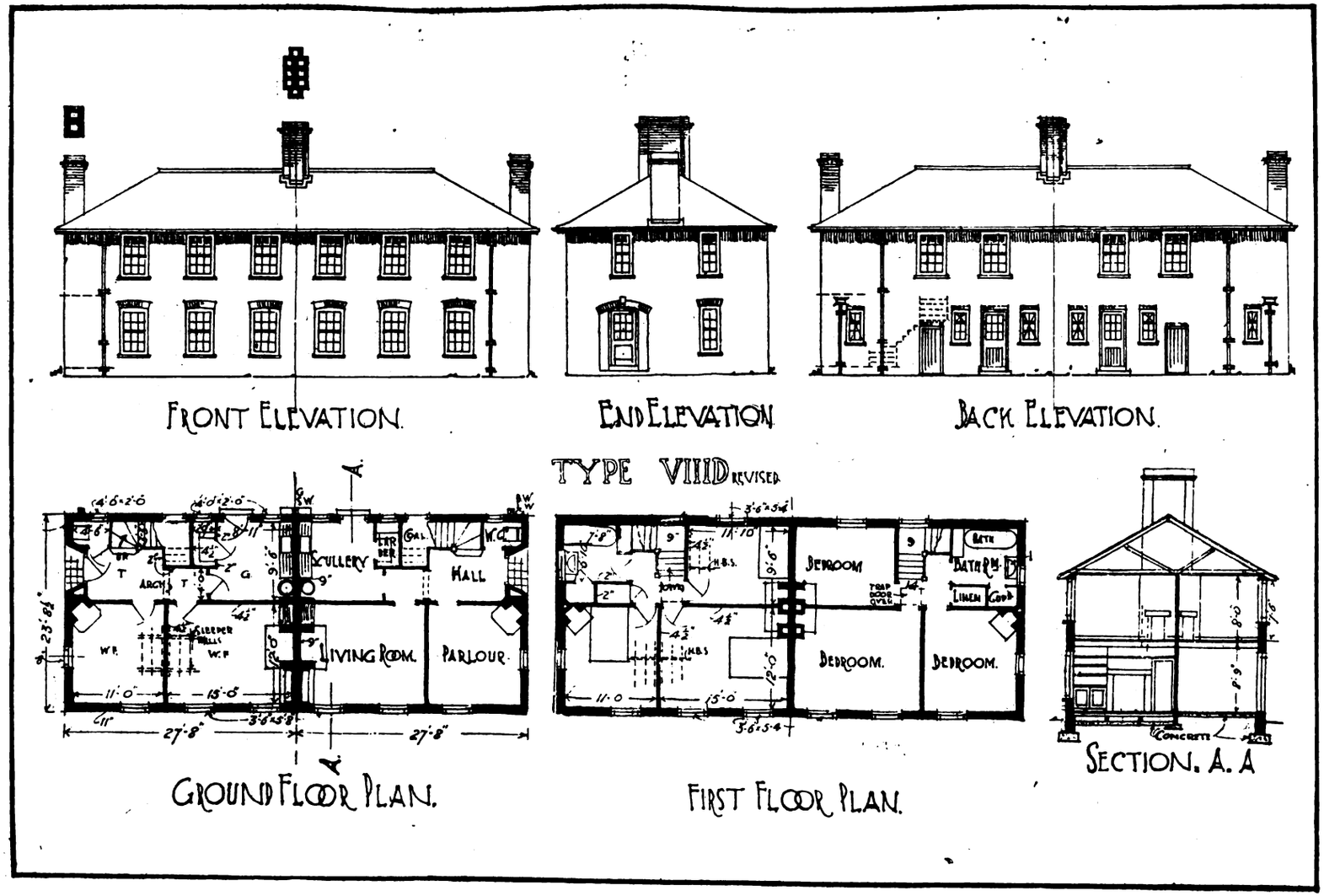

GRETNA HOUSING SCHEME. HOUSES TYPE VIII. D.

By a Group of Architects under the Direction of Mr. Raymond Unwin, F.R.I.B.A.

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REBUILDING OF THE MESSENGER INN, BUCKINGHAMSHIRE.
Messrs. Sidney V. North and C. Collas Robin, FF.R.I.B.A., Architects.

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WAR MEMORIAL CROSS, HOLY TRINITY, WINCHESTER.
Mr. Paul Waterhouse, M.A., F.R.I.B.A., Architect.

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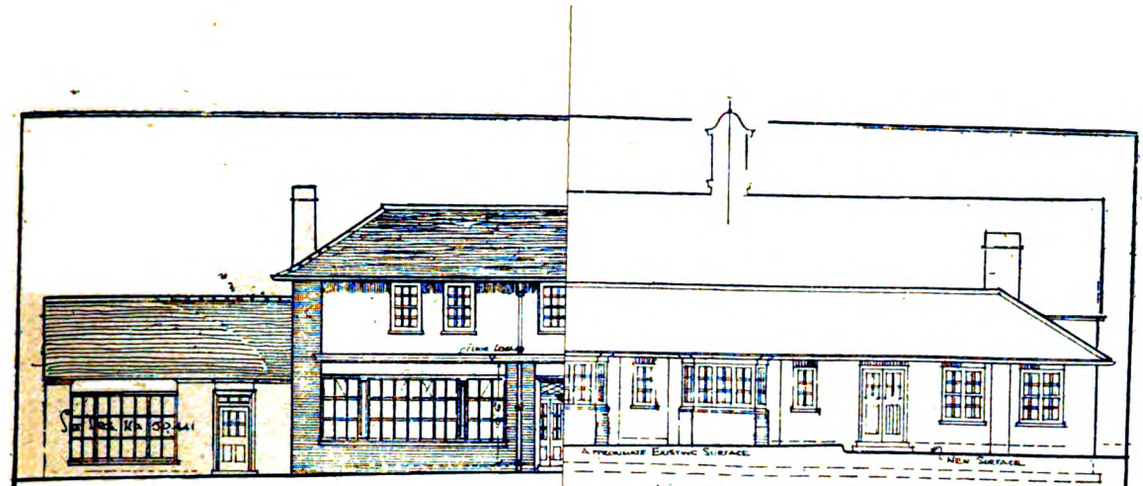
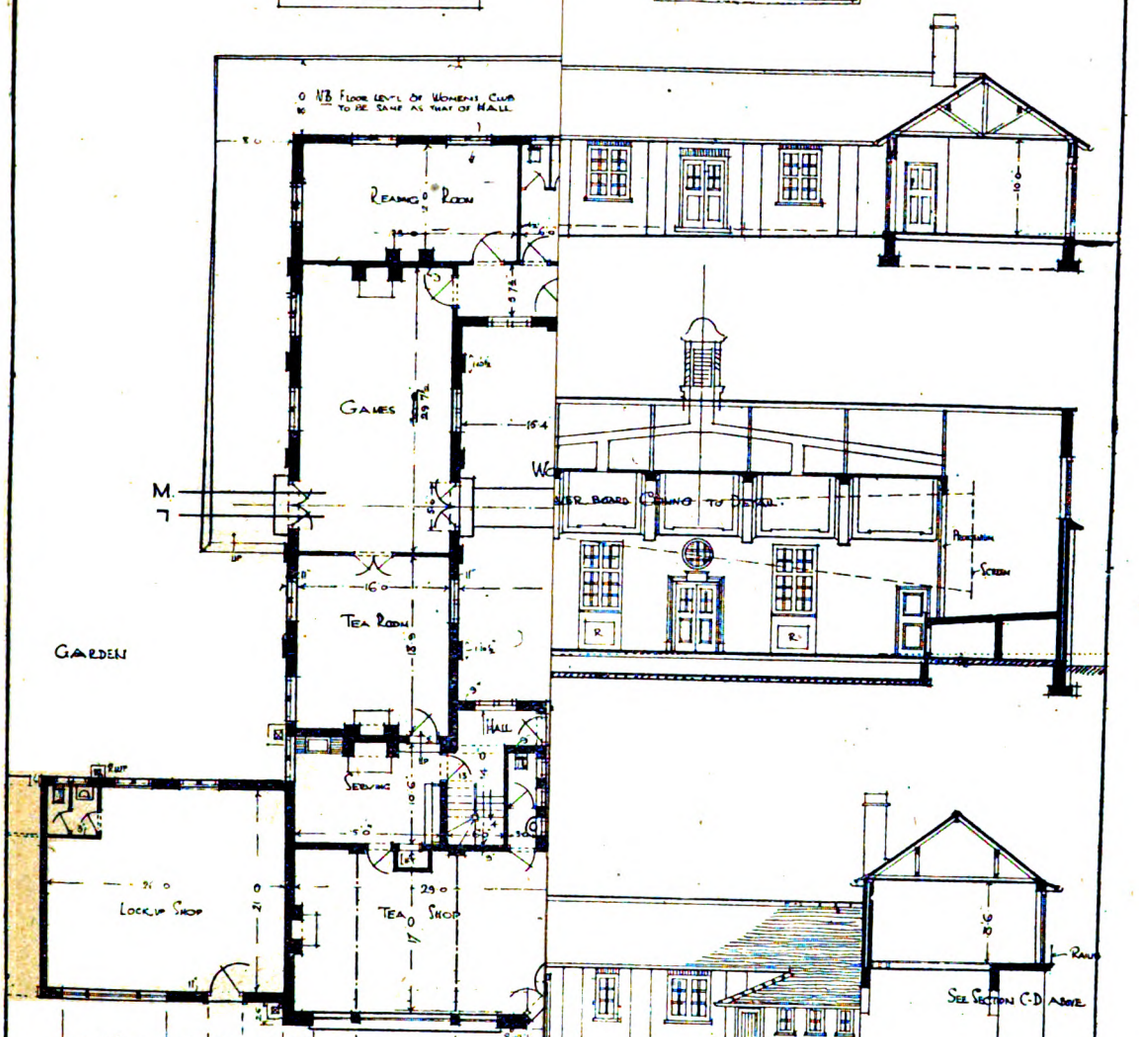


FRONT ELEVATION

SOUTH ELEVATION



GROUND FLOOR PLAN

FIRST FLOOR PLAN

SECTION I-J

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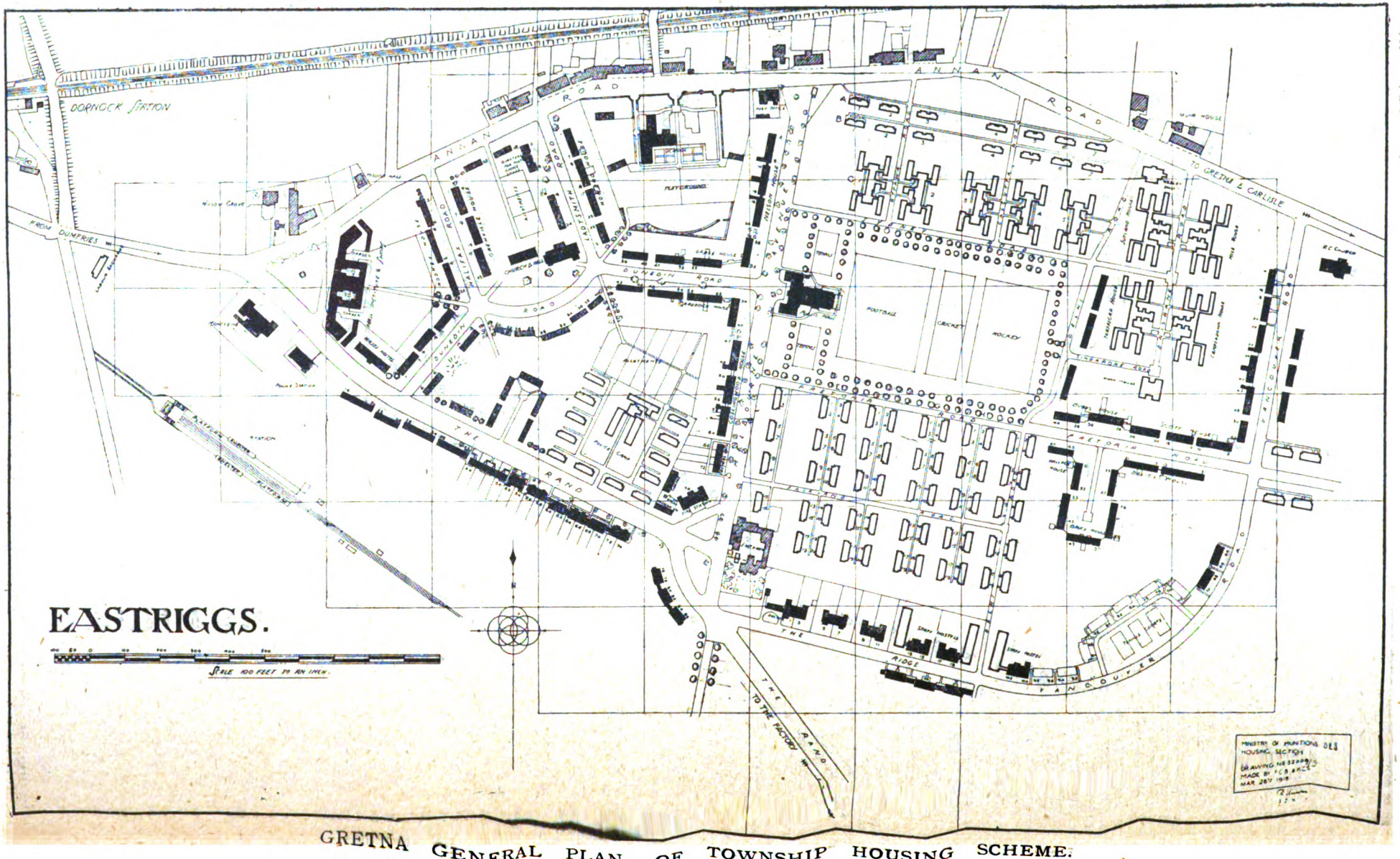

GRETNA GENERAL PLAN OF TOWNSHIP HOUSING SCHEME.

By a Group of Architects under the Direction of Mr. RAYMOND UNWIN, F.R.I.B.A.

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Our Illustrations.

WAR MEMORIAL CROSS AT WINCHESTER.

This drawing was shown in this year's Royal Academy Exhibition

Mr. Paul Waterhouse, M.A., has designed for the parish of Holy Trinity, Winchester, a war memorial in the form of a crucifix placed on a spreading stone base, so arranged as to receive the names of those members of the parish and congregation who have given or may yet give their lives for their country. The carving and colouring of the life-size figure of the Christ was entrusted to Messrs. H. H. Martyn and Co., of Cheltenham, and the stone used for the base is from the Swanage quarries. Messrs. Carter, of Winchester, carried out the actual erection of the memorial, which was dedicated by the Bishop of Southampton this year. The graveless churchyard in which the memorial stands is a garden of exceptional beauty.

ROYAL MESSENGER INN, BUCKS.

It is proposed to erect this building, of which an illustration of the main front is given, after the war. The design has been influenced by adjoining work, of which it is a continuation, and will be executed in roughcast with Bath stone dressings and the roof covered with old tiles. We reproduce the water-colour view which was exhibited at the Royal Academy this summer. Messrs. North and Robin, of Regent Street, W., are the architects.

HOUSINGS FOR MUNITION WORKERS AND OTHER BUILDINGS AT GRETNA AND EASTRIGGS.

We commence to-day a series of working drawings illustrating some of the dwellings and several other buildings which form this enormous housing scheme, carried out by the Government in connection with one of the factories. The area covered is very extensive. The chief township includes housing for men and women munition workers. Constructional workers had to be provided for while the factories were in course of building, some 16,000 being resident on the spot or in the neighbouring town of Carlisle and various villages within accessible distances. Gretna Green village, being adjacent to the railway, was chosen as the contiguous site for this vast enterprise, and the site being on a slope towards the Solway Firth, furnished facilities for a drainage scheme and extensive permanent water supply. The plan was also so contrived that little disturbance was occasioned to the farmhouses and other old buildings of historic association in connection with the village itself. The alignment of the main line of the new town was settled so as to connect the village with its church tower at the northern end, this central avenue having a vista towards the mountain group of Skiddaw on the south.

The Defence of the Realm Act governed the realisation of the undertaking, and this included laundry, bakery, and central kitchen establishments for distributing food to the hostels, and mess rooms for the factory hands. The subsidiary township of Eastriggs provides accommodation for labour living on the spot near the western extremity of the factory, and not far from Dornock Station. The recreation ground is in the middle of the town, which is set on high land. A group of shops and institute faces the green. From the double-page sheet of details given herewith it will be seen that this building has sides for men and women, and the hall in the centre is schemed so as to be used either independently or by both sexes simultaneously. The position of this institution, fronting the green at the junction of the roads, gives a central situation of becoming importance.

The provisions for both communities necessitated elementary schools, fire station, a second public hall, with pavilion overlooking the recreation ground, post office, general offices, and police station; also official residences for the doctor, engineer, and other workers. The housing of the employees is diversified to meet varied accommodation, and the dwellings are planned after differing types. The old avenue of trees lining the road approaching Eastriggs was preserved, and utilised as one of the main thoroughfares of the layout. The footways are set outside the trees and the carriageway runs between them.

The designs have been produced by a group of architects under the direction of Mr. Raymond Unwin, F.R.I.B.A. Mr. S. B. Russell, F.R.I.B.A., is the chief assistant architect. The resident architect was Mr. C. M. Crickmer, F.R.I.B.A., some of the buildings being designed by him. Other buildings, including churches, are the work of Messrs. C. E. Simmons, Geoffrey Lucas, H. A. Saul, and Mr. R. S. Bowers, as well as Messrs. A. O. Cave and Harold Burgess. Subject to the necessary criticism and co-ordination of the designs due to war conditions affecting the choice of materials and to the urgency of economy as to the amount of buildings and modicum of labour, the principle adopted was to leave the individual architects as free a hand as possible with their designs and individual buildings. The result, therefore, is largely one of co-operative effort on the part of the number of architects, most of whom were in private practice previous to the outbreak of the war.

OBITUARY.

Ralph Nevill, F.S.A., of Clifton House, Castle Hill, Guildford, whose death was recently announced at the age of seventy-two, was elected an Associate of the Institute in 1870, Fellow in 1877, and was placed on the list of Retired Fellows in 1909. He served his articles with Sir G. Gilbert Scott, and remained with him for some years as assistant. He started practice in Godalming, and afterwards had offices in London, first in New Bond Street and later in Chancery Lane. Among his works are houses for Sir Henry J. Holland, Mr. I. H. Foster, and Mr. W. B. Lushington; Snowdenham Hall, Bramley, Surrey, for Mr. Robert Courage; Witmead, near Farnham, Surrey, for Colonel Davis; All Saints' Church, Norfolk Square, London; vicarage and schools at Busbridge, and various works of restoration at Saxby, Rotherfield, Witley, and Wickhambreux churches, and Godalming Parish Church. He was the architect of various houses in Gloucestershire, Surrey, Essex, and Hants, his most recent work being the restoration of Borde Hill, Cuckfield, Sussex, for Colonel Stephenson Clarke. He took an active part in the work of the Society of Antiquaries, being hon. secretary for Surrey, and serving on the Council for forty-two years. He was the author of "Old Cottage and Domestic Architecture in S.W. Surrey" (Guildford, 1889) and other works, and contributed to the *Transactions* of the R.I.B.A. a paper on the "Auditorium of a Theatre" and "Notes on Cottage Architecture" (see the R.I.B.A. *Journal*, Vol. IV. 3rd series).

Funds are being raised for building a new infants' school at Ledston Luck, Kippax, to cost £800.

The death is announced, on the 22nd ult., at a hospital abroad, of Ramon Pedro Tillett ("Ra"). Gunner, R.F.A., dearly-loved eldest son of Pedro and Mabel Tillett (grandson of Mr. Rowland Plumbe, F.R.I.B.A.), 62, Cranhurst Road, N.W.2, aged 19. R.I.P.

Miss Clarissa Georgina Palmer-Lovell, of Grosvenor Street, W., who died on July 3 last and left unsettled estate valued at £23,279 gross, with net personalty £26,667, has left to the National Gallery three pictures by P. Loutherbourg, R.A., her picture, "Blowing Soap Bubbles," by W. Collins, R.A., and two pictures on copper by Regaud, R.A.; to the Corporation of the City of London, a picture of "St. Paul's, with the Lord Mayor's Show in the Distance," by David Roberts, R.A.; to the Corporation of Hastings, a picture of "The Battle of Hastings," by A. Cooper, R.A., and £5,000.

THE SOCIETY OF ARCHITECTS AND THE CONTROL OF BUILDING MATERIALS.

Early last session a conference was convened by the President of the R.I.B.A. on the above subject, consisting of eight representatives from the R.I.B.A., four from the Surveyors' Institution, four from the Institute of Builders, and four from the National Federation of Building Trades Employers, and the London Master Builders' Association, jointly.

On January 8, 1918, a meeting of the conference was held, at which those present passed the following resolution:—

> That this conference is strongly of opinion that all restrictions upon the supply and delivery of raw and manufactured materials should be abolished immediately upon the declaration of peace, and a free market be established therein.

The Council of the Society was afterwards invited to express its views on the subject, and passed a resolution to the effect that in its opinion the conference as constituted was not sufficiently representative, and should be enlarged to include representatives of kindred societies and institutions and of unions and associations of manufacturers and workmen engaged in the building industry.

Further, the Council of the Society passed a resolution expressing itself in favour of the principle contained in the resolution, but not with the terms in which it was expressed, and declined to co-operate in communicating the conference resolution to the Government in its present form.

The conference on March 11 considered the society's resolutions, and unanimously invited it to be directly represented on the conference, and to nominate three representatives. At the same time representatives of the Quantity Surveyors' Association and the Institution of Municipal and County Engineers were added to the conference, and at a meeting held on March 27 the following resolution was passed:—

> That this conference is of the opinion that the principle of priority as regards the supply of raw or manufactured materials should be abolished immediately upon the declaration of peace, and that an open market be established in such materials as the best means of encouraging production.

It was arranged that a deputation, on which the Society was to be represented, should put the views of the conference before the Government, but some two months or more elapsed before the Government was approached, and it was not until the end of June that an appointment for July 9 was fixed with Dr. Addison, the Minister of Reconstruction.

In the meantime the situation as regards the supply of materials had changed, and there was every prospect and evidence of a future shortage, and the Council of the Society on further consideration of the matter withdrew from the deputation.

From the official report of the proceedings at the interview with Dr. Addison, it would appear that the deputation represented only the R.I.B.A., the Surveyors, and the Quantity Surveyors' Institutions, and it would seem that not only the Society, but the Association of Municipal and County Engineers and the representative bodies of the building trades had withdrawn their support to the resolution of March 27, and that the views put before Dr. Addison on July 9 were not, as was stated, those of the majority, seeing that only three out of the eight institutions constituting the conference were represented on the deputation.

The Chairman of the conference, Mr. Hare, made it clear to Dr. Addison that the majority of the conference admitted the present evidence of a future shortage, but that the deputation was in favour of abolition of control.

Dr. Addison touched the spot in expressing the view that where there was no shortage of material there would have to be some very good reason for continuing control, or in other words that if there was a shortage there would have to be some measure of control, which is the view of the Society, and probably of other bodies in the alleged minority on the conference

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He further stated that it was the considered purpose of the Government to facilitate the resumption of the industry on normal lines as early as possible. In that direction Dr. Addison may be assured of the cordial support of all concerned with the building industry, whatever their present views on control may be.

BUILDING AFTER THE WAR.

The Council of the Society having been invited by the Building Materials Supply Committee of the Ministry of Reconstruction to submit its views on certain questions contained in a reference to the committee regarding the supply of materials and labour, etc., and to make recommendations as to any measure of control, appointed the president, Mr. E. J. Sadgrove, F.R.I.B.A.; the vice-presidents, Mr. A. Alban H. Scott, and Mr. E. J. Partridge, F.S.I., and the chairman of the Practice Committee, Mr. George Baines, F.R.I.B.A., to meet the committee on the subject in amplification of the views expressed in the following memorandum submitted by the Council on June 20.

Memorandum embodying the views of the Council of the Society of Architects on the Ministry of Reconstruction's references 3 and 4 to the Building Materials Supply Committee.

Reference 3. Priority.—In the event of the supply of material or labour being insufficient to fulfil the total building demands during the transition period, the Council suggests the following order for priority and control to be exercised for the shortest possible time.

Order of Priority Suggested:—

1. Work of national importance, such as buildings required to accelerate shipbuilding or for other urgent public services.

2. (a) Necessary buildings for essential industrial purposes.

(b) Housing accommodation of a low rental value.

(c) Reinstatement of premises damaged during the war.

(d) Essential maintenance repairs.

3. Schools, sanatoria and similar work where urgently needed.

4. General housing accommodation.

5. Buildings of a non-productive kind, but urgently required in the interest of the public.

Note.—All other buildings to be considered on their merits and priority to be granted according to their national importance.

Method.—The Council strongly urges that if priority and control is instituted, the following points should be most carefully considered by the committee:—

1. That all schemes for building work, whether for Government departments or for industrial works, cottages and other classes of buildings, should come before one committee only, and that because certain building work may be carried out for or by a Government department, such work should not on that account be given preference, but that it should also be decided entirely on the basis of national importance.

It is suggested that no Government Department, or local authority, should have power to commandeer any building material, but that the purchase of such material should be regulated according to the national importance of the work for which it is required.

2. That a priority committee for post-war building work should be instituted and started immediately, so as to ensure a continuity of policy and form a means whereby prospective building owners or their architects can get into touch and consult a controlling authority on building work after the termination of the war.

It is suggested that the committee should consist of fourteen members, and be constituted as follows:—

One member nominated by the Society of Architects.

One member nominated by the R.I.B.A.

One member nominated by the Surveyors' Institution.

One member nominated by the Quantity Surveyors' Association.

One member nominated by the National Federation of Building Trade Employers.

One member nominated by the Institution of Municipal and County Engineers.

One member nominated by the Trade Unions Council.

Six nominated by the Government.

One nominated by the Government as chairman of the committee.

(2) Administration of Local Committees.

The Council urges the adoption of the principle of decentralisation, and suggests that in forming local committees under a Priority Committee certain existing machinery should be utilised.

It is suggested that these local committees should consist of the existing local areas formed by the Munition Works Board, under a chief surveyor, with the addition of two other members to be nominated by each of the county councils in each area, one of these two members being a person who is not a member of the county council concerned.

The Council invited the committee to consider the question as to whether the chairman of the local committee thus formed should be ex-officio a member of the priority committee.

PROCEDURE.

On the point of procedure it is suggested that the local committees should obtain all the necessary information regarding local needs and the available supplies of labour and material, etc. Applications from the various areas should in the first instance be dealt with by the local committees, and the claims should be submitted by them to the main committee, with any recommendations as to the order of priority.

The final settlement of priority claims would rest with the main committee, who would keep the local committee informed of the general national needs and supplies, etc.

It is further suggested that wide publicity should be given to the proposed post-war arrangements, so that building owners contemplating work covered by the priority suggested in items 1, 2, and 3 may become aware of the proposals so that they can prepare their schemes.

In this connection the interests of architects serving with H.M. Forces should be carefully considered, and only schedules for the most urgent buildings should now be prepared, such as those mentioned in the suggested order of priority items 1, 2, and 3.

Manufacture of Materials.—It is anticipated there will be a considerable shortage of manufactured materials, particularly bricks, and that it will take some considerable time to obtain any adequate stock to meet the demand.

It is suggested that a general investigation of the present condition of the brickfields should be undertaken with a view of enabling them at the earliest possible date to ensure quick manufacture; similar steps are suggested with regard to cement, lime, and plaster works.

The Council has already presented a report to the Department of Scientific and Industrial Research with regard to the greater utilisation of local materials, and it is considered by the Council that the carrying out of its proposals would considerably help to relieve any shortage of essential materials.

After bricks it is anticipated that timber will present the greatest difficulty, and it is suggested that the manufacture of concrete or other materials to take its place should be investigated. It may be possible that some of the present munition works may be utilised for this purpose, and also for the manufacture of certain fittings required for buildings.

It is further suggested that the committee should ascertain from actual manufacturers of various building materials the maximum output of their plant, how that output can be supplemented if necessary, and the condition of such plant in relation to manufacture.

The Council would also suggest that in demobilisation from H.M. Forces the release of architects and of men whose services are necessary in the key industries of the building trades should be expedited.

Reference 4.—Unduly High Prices.—The greater use of local materials, as mentioned under reference 3, will tend to reduce prices. The attention of the committee is called to the fact that in pre-war days certain railway rates for building materials were extremely excessive, and greater control in this respect is urgently required.

Canals should either be taken out of the hands of the railway companies, and nationalised, or the question of very much greater control as to extensions, improvements, and the reduction in cost of maintenance, working, and freightage for water traffic on inland waterways should be seriously taken up.

For instance, by the comparatively slight additional formation of short arms to the present canal systems a very much larger tonnage of building materials would be carried by such waterways, and if the canal banks were improved the use of electric or motor-driven barges would help very considerably both as to cost of freightage and speed.

The Council understands that there is a committee considering what use can be made of the surplus mechanical transport facilities at the termination of hostilities, and it is suggested that a certain number of these vehicles should be reserved for the transport of building materials.

Materials should be ordered for building work much earlier than has been usually done so as to enable greater use to be made of the necessarily slower water traffic.

A further point for consideration is the high prices in certain trades caused by the combination of merchants and also the combination of manufacturers.

Reference has already been made to the question of the greater use of local materials, but in addition to this, throughout the period of control or priority, it is suggested that the committee should consider and eliminate as far as possible all wasteful transport.

Undoubtedly one of the greatest causes of unduly high prices of building work is the lack of interest the workers have in their work. The Council does not consider that it is a competent body to discuss this matter in detail, but earnestly suggests that consideration be given to some arrangement whereby the actual workers on the building should have directly or indirectly a financial interest in the result of their labours.

It is considered that for certain classes of buildings it would be possible to extend the standardisation of materials.

Control.—If there should be Government control in the form of priority, it should apply to the production, transport, and distribution of materials. With regard to the latter point every endeavour should be made to regulate distribution, so that unnecessary transport is eliminated as indicated above.

With regard to the question of purchase, fair maximum prices should be arranged for a certain period after the war, and if possible the arrangements with the manufacturers should be such as not to hinder production, but rather to accelerate it. If the committee could give the building public some guidance as soon as possible as to the anticipated position of priority and control in the country, it would enable manufacturers of building materials to prepare themselves and put them in a better position to judge the probable output required. At the present time there is naturally a good deal of vagueness and uncertainty existing in their minds.

Generally.—The Council of the Society takes a very keen interest in the problem under consideration, and offers its services to the committee in connection with any schemes put forward for their solution.

Hedingham Castle, the remains of an old Norman fortress in North Essex, has been destroyed by fire.

Four months' exemption was granted by the House of Commons Appeal Tribunal last week to a road sweeper (aged 47, Grade 2), conditional on his remaining in that employment. It was pointed out that the main thoroughfares require constant sweeping in these days of extraordinarily heavy traffic.

The Government having urged upon the Burton-on-Trent Council the necessity of providing additional housing accommodation owing to the increasing population, the committee charged with the scheme have selected a site on the Branstone Road, on which, should the recommendations be agreed to, a large number of houses will be erected. It is understood that the Government Department concerned intend to provide a recreation ground.

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STABILITY OF EMBANKMENTS IN RELATION TO THE EROSION OF FLOWING WATER.

In the calculations for embankments precise data are often lacking. The usual formulæ deal with the movements of water, but give little guidance as to the best means of protecting the banks of rivers. Technical opinions differ widely. One expert will consider the use of fascines and a facing of dressed stone essential; another will advise the use of rough stone blocks merely laid at random on the bank; besides these, there are the new methods of using reinforced concrete slabs and wire netting. It would be very satisfactory if a neat formula could be found from which, given the local conditions, could be deduced the type of protection necessary and the strength to be provided.

The collection of numerous observations shows that the erosion increases, firstly, with the hydraulic gradient of the water, and, secondly, its depth; and that it is the same for all cases in which the hydraulic gradient is multiplied by the depth is a constant. This constant multiplied by 1,000 may be designated the erosion factor, and represents the action upon the bed of the river or stream, and also necessarily upon the banks and any protection which may be placed thereon.

After describing the various actions of the water, the author refers to the constant described above, and states that its value lay between 1 and 300 in a large number of cases of which he had collated the data. He has arranged these in two tables in the form of groups, and gives sketches representing the precise type of protection which has been found adequate for the banks of rivers having constants included in a given group. The first group, for example, includes all cases where the erosion factor has a value from 1 to 5, and here the protection may vary from nothing to a thin covering of loose stones, the bank having a slope of 1 in 2. The protection increases until from 20 to 30, one of large loose stones or dry walling is used, and this ends the first series. The second series comprises factors from 30 to 300, and for the last the banks were protected by very large granite blocks, laid with dry joints, and the bed was covered with large pieces of rock. The hydraulic gradient was 200 per 1,000 and the depth of water 1.50 m. For each case cited in the tables the name of the particular river or watercourse is given; for instance, the last example is found at Rovana, near Campo, in the Val. Maggia.—(*Schweizerische Bauzeitung*, July 27, 1918.)

PROFESSIONAL AND TRADE SOCIETIES.

Glasgow Royal College Architectural Craftsmen's Society.—The syllabus of the coming session states that on account of the war this society will only meet once a month instead of fortnightly, and that intimation of meetings will be given by postcard instead of the usual lithographed sketch. The opening address by the President, Mr. David Skinner, Master of Works, was given last Friday. The other fixtures are:—October 11, "Gleanings from the English Cathedrals," by Professor Charles Gourlay, B.Sc., A.R.I.B.A., F.S.A. Scot.; November 8, "Timber," by Mr. John Fairley; December 6, "Joinery Applied to Ship Work," by Mr. Alex. B. Mitchell; Jan. 10, "The Art of Scientific Illumination," by Mr. J. O. Cook; February 7, "Building Problems for the Future," by Mr. James S. Boyd, Lic.R.R.I.B.A., and Mr. James Muir; Business meeting, March 7.

The Blyth U.D.C. has approved a scheme to build a national kitchen and café on municipal land in Bridge Street, at an estimated cost of £2,300.

The Old Monkland Parish Council have under consideration the matter of new office premises, and have inspected the newly-acquired premises in Bank Street. Various suggestions as to the best method of adapting the buildings for the necessary purposes having been considered, it has been agreed to appoint Mr. James Davidson, Coatbridge, architect in the alterations.

Correspondence.

ARTIFICIAL FUEL.

To the Editor of The Building News.

Sir,—Through the courtesy of a correspondent in London I have been able to see your issue No. 3271, and to read an article, "Artificial Fuel," which interested me very much.

I have been for months past engaged upon the problem of utilising the small coal which is found in great abundance throughout the Army areas, and particularly in the neighbourhood of the coal mines. My experiments have been crowned with complete success; with a mixture of two-thirds fine coal and one-third clay or chalk I have been able to make a coal-cake which is quite as good for ordinary cooking and heating purposes as house coal, and is in many respects, notably in its cleanliness and uniform size, even to be preferred.

I have had these coal-cakes analysed by a well-known firm in the East of London, and enclose the figures. You will see that the calorific value is 10,530 British thermal units, while the ash content is 28.77 per cent.

But on what grounds do you base your assertion that to economise coal by mixing it with chalk "is of no benefit whatever"?

You do not appear to realise that chalk (or clay) is added in solution for two purposes—(1) as an adulterant; (2) as a "binder."

In (1) its use is analogous to that of water added to milk, and, of course, lowers, *pro tanto*, the calorific value of the whole. But if the total result is entirely satisfactory as a combustible, it only goes to prove that coal, *per se*, carries more calorific power than is required.

(2) is more important. Here the clay takes the place of pitch, and enables small coal to be utilised by knitting it together into a clean and durable "cake." By this means the accumulations of waste small coal to which the writer refers can be utilised, and market for "fines" gradually created. This, in its turn, will induce colliery proprietors to pay their miners for sending to the surface *all* the coal hewn instead of the "round" coal alone, which is customary in many coalfields.

With the simple device of the Ablain coal cake mould any householder can make his own fuel, using either chalk or clay, whichever is the more readily available. Not a pound of coal dust need remain in the cellar, and full value obtained from its calorific qualities.

I am sending you a couple of the Ablain coal-cakes* such as we are using at the front in place of coal, and shall be delighted to put the results of my experiments before any of your readers who may be interested in the subject.—Faithfully yours,

Robert Standen, Lieut-Colonel.

Headquarters, 20th Div., B.E.F., France, September 17.

[In 1872, when the idea of using chalk as a coal-saver was revived by the late Rev. Henry Moule, a somewhat lengthy discussion ensued in our other paper, the *English Mechanic*, in which it was demonstrated that, as a commercial proposition, the idea was a fallacy; that the chalk causes an actual loss of heat by its decomposition and partial conversion to the gaseous state; and that the use of clay would be preferable. Those desirous of investigating the matter should look up pp. 217, 268, 435, 486, 577, and 628, Vol. XVI., and pp. 14, Vol. XVII., of the *English Mechanic*.—Ed. "B.N." and "E.M."]

MUNICIPAL BATHING ESTABLISHMENTS: SHOULD THEY INCLUDE TURKO-RUSSIAN BATHS?

To the Editor of The Building News.

Sir,—The Town Clerk of Folkestone has received the following letter in reference to the recent closing of the Turko-Russian baths in that town. These baths were long maintained in excellent order by private enterprise:—

"Highlands, Folkestone,
"September 23, 1918.

"Dear Sir,—I very much regret to find our Turko-Russian baths closed, and venture to write to you thereon in the hope that the Borough Council will come to the rescue and take what steps may be necessary to preserve these baths to the town, for a health resort without these baths is like what Hamlet would be without the Prince of Denmark.

"As a constant user of Turko-Russian baths for more than fifty years, I know something of their value, and I trust when the attention of the Council is called to the matter they will realise the need for some immediate action in the interest of their constituents.

"When a municipality undertakes a public service it should do it thoroughly and for every section of the community, therefore, in the matter of bathing equipment it would seem to be only right that it should be made complete by adding Turko-Russian baths to those which the Council have for so many years maintained."—Yours faithfully,

Mark H. Judge.

* These are very good. They are firm to handle; they burn well, there is no waste, and are as satisfactory a solution of the problem of using coal dust as any we have seen and much more so than most.—Ed. "B. N." and "E. M."

Our Office Table.

The Austrian cement industry has had to face greater difficulties in the past year than earlier in the war, especially owing to lack of coal, but the financial interests are more favourable. Factories which paid dividends in 1916 have raised their rates, and others have again become paying concerns. The chief reason was that the official standard prices were fixed high enough to allow the making of a profit, in spite of the rapid rise in costs of production and the restricted utilisation of plant which resulted in an average production of scarcely 28 per cent. of the normal. This year difficulties are still greater; the new Economic Combine of the Cement Industry has not been able to overcome the coal shortage, so that large works which were still employed last year have had to close down. Meantime, cement prices have risen nearly 50 per cent., and hence it is likely that even this year shareholders will receive something. The largest cement factory, the Perlmooser, made a profit of nearly 3,000,000 kronen last year, almost double that of the previous year, but less by ¾ million than that of the last year of peace. The Königshofer Cement Factory after three years without dividends paid 8 per cent. in 1917; its gross profits, 2,450,000 kronen, were half a million higher than in 1913, and the net profit amounted to 727,000 kronen as against 21,000 kronen in 1916. The Austrian Portland cement factory in Szezakowa, far the most prosperous concern of the kind in Austria, paid over 20 per cent. in peace time. The Golleschau Portland Cement Factory failed to pay dividends for two years, and distributed 6 per cent. in 1917, and the Spalato Portland Cement Factory Company, after three years without a dividend, paid 6 per cent. in 1917 against 12 per cent. in the last two years of peace.

Stonehenge has been presented to the nation by the donor, Mr. C. H. E. Chubb, of Salisbury, who bought the monument for £6,600 from Sir Cosmo Antrobus in September, 1915. Fourteen years previously £10,000 was offered for the monument and a few acres of Down land surrounding it, but the owner (the late Sir Edmund Antrobus) said that his price was £50,000—a figure which was regarded as excessive. The present receipts from fees levied on visitors, which average £360 a year, are to be given to the British Red Cross Society while the war lasts.

Representatives of the Federation of British Industries, of the National Alliance of Employers and Employed, and of Labour generally, met in conference in London last week to consider a housing scheme on broad lines in districts where urgent. The scheme favours support of public utility societies and housing associations, to form an addition, and not an alternative, to municipal housing

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schemes. Contribution in the form of loan stock would do away with the system of tied houses under which tenants occupy premises owned by their employers. The scheme would enable small employers to combine in certain districts. It contemplated having on the committee of each public utility company representatives of the local trades unions, local employers, tenants, the municipalities, and social workers of the district. Model houses, gardens, allotments, and means of recreation would be provided. The conference agreed to ask Mr. Hayes Fisher to receive a deputation before the Government housing scheme is definitely adopted.

Mr. Hayes Fisher, President of the Local Government Board, speaking at a conference of representatives of the county councils and local authorities of Cornwall, Devon, Dorset, and Somerset at Exeter last Wednesday, said that the State was wise in trying to form a partnership between itself and local authorities to solve the housing problem. The suggestion that the State should pay 75 per cent. of the actual cost of building, instead of that proportion of the estimated deficit on schemes, was a double-edged weapon, because if the cost was below the estimate the State would claim a share of the advantage. The sooner they could build houses at economic rents without State subsidies the better, but the present proposals were to meet urgent needs, and he hoped the schemes would be so far advanced that as soon as there was a prospect of peace they could all be set in motion, as it were, by pressing a button! Let us hope so, and that the L.G.B. will not be "short of buttons" then!

Whilst assisting the workmen employed by Messrs. Dryland and Preston, Limited, in the demolition of the Smallbridge Primitive Methodist Church, Rochdale, on Friday week, the foreman, Richard Edmund Stott (53), of 2, Shore Meadows, Shore, Littleborough, was fatally injured through the sudden breaking of a cross-plank in the scaffolding on which he was working. At the inquest, evidence was given by John James Stott, of 3, Church Street, Smallbridge, who was working on the plank with the deceased when the accident occurred. He said the plank was seven inches wide and three inches thick, and it was most unusual for a plank of that kind to break. Dr. Jacob Brodetsky, house surgeon at the infirmary, said deceased was admitted to the institution suffering from injuries to the head and fractures of the left arm and ribs. Mr. F. N. Molesworth (county coroner): You would say, then, that he died as a result of his injuries? Dr. Brodetsky: As a medical man, how can I know that he died from his injuries? Mr. Molesworth: There seems to be no doubt about it. Dr. Brodetsky: I have not conducted a post-mortem examination. I can only tell you what we found. The Coroner said he was quite satisfied that the death was due to injuries received in the fall, and would return a verdict of "Accidental death." Mr. J. A. Hudson (on behalf of Dryland and Preston, Ltd.), and Mr. C. H. Dryland both expressed regret at the death of Mr. Stott, who had been employed by the firm for thirty years.

In the already known art glazing processes the small individual panes of glass are bordered or "framed" with lead and then all of them are joined together to form the coloured glass window or other decoration. Since the advent of the war, however, the use of metals of all kinds has been more and more restricted in Germany, so that it has been necessary to find some suitable substitute for this purpose. According to a new process, the single pieces of glass are arranged in the manner desired upon a fireproof backing, and are then joined all together by heating in the kiln with the aid of a good glass flux. As soon as this first fusion has been effected, the entire piece of work, together with the backing, is withdrawn from the kiln, finely powdered glass flux is filled into all crevices and joints, and it is then melted by the assistance of a blowpipe. The piece of work is now ready for mounting in position, and absolutely no leading or metal bordering of any kind is required. The artistic effect is enhanced by the method of mounting, and the picture is not so much "broken up" as by the pieces of metal.

A novel fire-proof lathing is described in *The Engineering News-Record* (New York, August 15). It consists of a rectangular mesh of light wires with a terra-cotta covering baked on, and is said to have found extensive application in New York City. The cross-shaped terra-cotta tablets which are baked on to the wires at their junction are not continuous, so that the lath can be put up in rolls for shipment, the wires bending at the junctions of the terra-cotta tablets. The terra-cotta, however, does stiffen the wire very much, and makes it easy to form a flat surface for plastering. The porous terra-cotta forms a bond with mortar, obviating the necessity for forcing the mortar through, to form a key at the back; another advantage is that no furring strips are required. The stiffness of the lath is such that in some office-buildings in New York City it was stretched tight from ceiling to floor and plastering was applied directly to both sides, forming a two-inch solid partition, and the construction was approved by the New York Building Department after fire tests. Another use of this material is to form a plastering surface on which a finishing coat may be applied to concrete walls. By placing the wire lath against the inside of the forms before the concrete is poured, the lath is left embedded in and firmly attached to the concrete, and furnishes a rough terra-cotta surface of sufficient bond for plastering.

The Dodman, the bold headland which is the chief feature of the Cornish southern coast between Rame Head and the Lizard, and which commands a magnificent view of sea and land, has been bought for the National Trust for Places of Historic Interest or Natural Beauty. It is one of the highest points on the coast, rising nearly 400 ft. from sea level, and is the original of Sir Arthur Quiller-Couch's book "The Dead Man's Rock." It was included in the properties of Lord Mount-Edgcumbe, which were sold by auction last week, and was secured for the public benefit for £1,400 by a purchaser who wishes to remain anonymous. In addition to the well-known promontory, the purchase includes Penares Farm, the whole property being 145 acres in extent. Arrangements will be made at once by the National Trust for looking after the property and making it available to the public.

On behalf of the members of the Glass Industry Interim Industrial Reconstruction Committee, which has been formed (under the ægis of the Ministry of Reconstruction, the Board of Trade, and the Ministry of Labour) of an equal number of representatives of employers' associations and employees' unions in every section of the glass industry, the chairman, Mr. John Stokes, of 34, Newington Green, N.16, calls our attention to the vital significance to this country of certain trade developments contemplated in Germany. After the war Germany will seek to restore her credit abroad by a concentration of effort upon the export of certain chosen manufactures. Chemicals are named as the first of these manufactures, then comes glass. The reason for the choice of glass is that it is a key to the gate of many other industries. A nation holding the monopoly of glass could hold up nearly all other trades. We can make hardly anything without using glass at some stage of its manufacture, even if glass is not an actual part of the finished product. Before the war the British glass manufacturer and his men had, owing to Germany's hold, little chance of profit or employment. Under war conditions it has been difficult to produce the vital requirements of the country fast enough. There is now opening in this trade for investment of capital and for well-paid skilled labour. Will it last? It will be in danger after the war if not supported in a prompt and practical way. The industry is ready to do its part; it only asks of our rulers and of the public that they will give to glass its proper position in the national life of the country. Germany's rise has been attributed directly to the English policy of the "open door." The glass industry fear that the policy of the open door may be carried to such an extent that the British glass industry may become extinct. On this point employers and workers think alike. Reform of this condition and help during our reconstruction period is not a political question, but a business proposition. They ask that the industry be given the chance of full development, and that a "key" industry be saved from the hands of Germany, determined to capture it at all costs because it is a "key."

CHIPS.

Funds are being raised for building a new church in Lodge Road, Orrell.

Funds are being raised for the renovation of the Shore Parish Church, Littleborough.

Plans have been prepared for alterations to the Imperial Hall, Deansgate, Bolton, for the Y.M.C.A.

As a war memorial it is proposed to erect a chapel with beautiful stained-glass windows on a central site in Paisley.

The Chorley Guardians are considering a scheme for various improvements at the institution, estimated to cost £5,750.

The Birstall U.D.C. has under consideration a scheme for building Council offices and a public assembly hall in Market Street.

As a war memorial a chapel is to be erected in the Parish Church, Chagford. The sum of £336 has been subscribed towards the scheme.

The Governors of the Northallerton Grammar School propose providing four new classrooms to the school, and the erection of a headmaster's house and hostel.

A meeting will be held at King's College, Strand, to-morrow, at 5 p.m., to inaugurate a scheme for a memorial to former students who have fallen in the war, when the Hon. R. C. Parsons, treasurer of the delegacy, will take the chair.

Mr. J. S. Killick, the county surveyor of Hertfordshire, who had been acting as the Road Board's assistant engineer, is now the acting manager and engineer during the absence in France of Brigadier-General H. P. Maybury, C.B.

The City of London Coroner last Thursday said that last year, when the street lighting was reduced one-third, he had 68 fatal accidents to inquire into, and now that the lighting was to be reduced to one-half he did not know what was going to happen.

The Poorhouse Committee of the Aberdeen Parish Council have had under consideration a report by Mr. George Watt, architect, with regard to proposed repairs on the Oldmill Poorhouse Buildings, now used as a military hospital. He estimates the cost of carrying out the work at £782.

A school of civic design has been established in Paris with a staff of all the acknowledged experts. The official title of the school is the "École Supériéure d'Art Publique," and the directeur-administrateur is M. Charles Patris, a well-known architect of Brussels. Many Belgians now in France are availing themselves of the teaching provided.

It has been found that oil stains on concrete floors may be removed by using a mixture of 1 lb. of oxalic acid in 3 gallons of water, with enough wheat flour added to make a paste that can be applied with a brush. Allow the application to remain for two days, and then remove it with clean water and a scrubbing brush. A second application may be necessary in stubborn cases.

The death is announced of Mr. Herbert John Bromley, a partner in the firm of Messrs. J. C. Towner and Bromley, auctioneers, of Eastbourne. The deceased gentleman had been in indifferent health for some time, and as a consequence was rejected by the military authorities. He was a member of the Surveyors' Institution and a Fellow since 1914 of the Auctioneers' and Estate Agents' Institute.

"There are more Government departments for keeping a man out of the Army than there are for putting them in the Army—that's my opinion," said Mr. J. E. Mitchell, presiding at the South Staffordshire Appeals Tribunal, at Wolverhampton, on September 24. "And so say more of us!" On the same day at Wolverhampton a man got an exemption for six months who keeps an oyster shop, on the ground that oysters "are not a luxury."

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FOR
Olivers'
Seasoned
Hardwoods,
APPLY TO—
WM. OLIVER & SONS, Ltd.,
120, Bunhill Row, London, E.C.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BEDFORD.—For the demolition of 106 and 108, Midland Road, for the corporation:—
Bowler, H., Priory Street, Bedford £290 0 0
(Recommended for acceptance.)

BOSTON.—For the rebuilding of Parson's Bridge over the North Fortyfoot Drain in Holland Fen, for the Highways Committee:—
Pinder, J. W., Boston £1,400 0 0
(Accepted.)

BRADFORD.—For cleaning, distempering, etc., at the town hall, Bradford, for the corporation:—
Higginbotham, A., and Sons, Idle, Bradford, accepted.

DERBY.—For excavating and preparing ground for the laying down of a motor weighbridge, and the erection of a small office building, for the guardians of Derby Union:—

Parker, J., and Son, Friargate ..	£302	0	0
Ford, W., and Sons, Summer Hill	298	0	0
Ford and Western, Ltd., Osmaston Road	259	0	0
Walkerdine, W., Ltd., Bridge Street	218	0	0
Fryer, J. H., Great Northern Road	210	0	0
Woodiwiss, A., 33, Chatsworth Street*	198	11	6

All of Derby. (*Accepted.)

EASTBOURNE.—For addition to the administrative building at the Gildredge Hospital, Old Town, for the sanitary committee. W. C. Field, borough architect:—

Woolnough, J. W.	£550	0	0
Peerless, Dennis, and Co.	523	0	0
King, A. W.	419	0	0
Bainbridge, G., and Son, Terminus Road (accepted)	362	0	0
Miller and Selmes (withdrawn)..	330	0	0

Architect's estimate, £350.

LEWISHAM.—For supplying and fixing new heating boiler at the town hall, for the Lewisham Borough Council:—

Wontner-Smith, J., Gray and Co.	£119	13	0
Brightside Foundry and Engineering Co. (accepted)	113	15	0

LIST OF TENDERS OPEN.

BUILDINGS.

Oct. 2.—Tenders are invited by Mr. B. O'Flynn, B.E., architect, for conversion of existing buildings at proposed New Road, Fernhurst, College Road, into dwellings.—For Mr. T. Donovan.—Plans and specifications can be seen at 60, South Mall, Cork.

ENGINEERING.

Oct. 4.—Supplying and erecting, at the Stuart Street, Manchester, generating station, high and low pressure steam and feed pipework and supports, including alterations to existing pipework, No. 1 boiler house.—For the Electricity Committee.—Specification on application to F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.

FURNITURE.

Oct. 4.—Tenders for lockers are invited by the Commissioners of H.M. Works, before 11 a.m., on October 4, addressed to the Secretary, H.M. Office of Works, Storey's Gate, Westminster, S.W.1. Forms of tender, etc., from the Controller of Supplies, H.M. Office of Works, King Charles Street, Westminster, S.W.1.

IRON AND STEEL

Oct. 5.—Supplying and delivering to Sandling Junction, South-Eastern and Chatham Railway, of about 690 yards of 8-in. cast-iron socket pipes and specials to B.S. specification, and coated with Smith's solution.—For the Hythe Town Council.—J. Green, M.I.C.E.I., Borough and Water Engineer.

SANITARY.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the abovementioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

It is particularly requested that all drawings and all communications respecting illustrations or literary matter, books for review, etc., should be addressed to the Editor of the BUILDING NEWS, Effingham House, 1, Arundel Street, Strand, W.C.2, and not to members of the staff by name. Delay is not infrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

When favouring us with drawings or photographs, architects are asked kindly to state how long the building has been erected. It does neither them nor us much good to illustrate buildings which have been some time executed, except under special circumstances.

*** Drawings of selected competition designs, important public and private buildings, details of old and new work, and good sketches are always welcome, and for such no charge is made for insertion. Of more commonplace subjects, small churches, chapels, houses, etc.—we have usually far more sent than we can insert, but are glad to do so when space permits, on mutually advantageous terms, which may be ascertained on application.

ADVERTISEMENT CHARGES.

SITUATIONS VACANT.

The charge for advertisements for "Situations Vacant" is Two Shillings and Sixpence for Twenty-four Words, and Sixpence for every Eight Words after. *All Situation Advertisements must be prepaid.*

SITUATIONS WANTED AND PARTNERSHIPS.

The charge for advertisements for "Situations Wanted" and "Partnerships" is One Shilling for Twenty-four Words, and Sixpence for every Eight Words after.

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The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation Advertisements) is 6d. per line of Eight Words (the first line counting as two), the minimum charge being 4s. 6d. for 50 words. Special terms for series of six insertions or more can be ascertained on application to the Publisher.

*** Our Direct Subscription Agents for Australia are Messrs. E. T. Kibblewhite and Co., Printers and Publishers, 19, York Chambers, 105, Liverpool Street, Sydney, New South Wales; for Japan, The Maruzen Co., Ltd., 11-16, Nionbashi Tori Sanchome, Tokyo who will receive Subscriptions at £1 10s. per annum on our account. Copies of the paper will be sent by us direct to the subscribers' address.

*** The special rate to Canada is £1 10s. = $7 80c. for 12 months, and 15s. = $3 65c. six months. Our Direct Subscription Agents for Canada are Messrs. Sells, Ltd., 302, Shaughnessy Buildings, McGill Street, Montreal, who will receive Subscriptions, £1 10s. per annum, on our account.

NOTICE.

Bound copies of Vol. CXIII. are now ready, and should be ordered early (price 12s. each, by post 12s. 10d.), as only a limited number are done up. A few bound volumes of Vols. XXXIX., XLI., XLVI., XLIX., LIII., LXI., LXII., LXIV., LXV., LXVI., LXVII., LXVIII., LXIX., LXXI., LXXII., LXXIII., LXXIV., LXXV., LXXVI., LXXVII., LXXIX., LXXX., LXXXI., LXXXII., LXXXIII., LXXXIV., LXXXV., LXXXVI., LXXXVII., LXXXVIII., LXXXIX., XC., XCI., XCII., XCIII., XCVII., XCIV., XCV., XCVI., XCVIII., XCIX., C., CI., CII., CIII., CIV., CV., CVI., CVII., CVIII., CIX., CX., CXI., and CXII. may still be obtained at the same price; all other bound volumes are out of print.

Handsome Cloth Cases for binding the BUILDING NEWS, price 2s. post free 2s. 5d., can be obtained from any Newsagent, or from the Publisher, Effingham House, 1, Arundel Street, Strand, W.C.2.

BACK ISSUES.

Most of the back issues are to be had singly, price 6d. each, postage 1d. Subscribers requiring them should order at once, as they soon run out of print.

RECEIVED.—H. A. C.—C. W. H.—D. Pratt—G. A. C. Soc.—R. Wilson—G. G. H.—Rev. W. J. H.—A. W. W.—Col. G.—B. and B.—T. R. S.

A. W. E.—No.

KENTISH READER.—Yes; thanks.

MEASURER.—We gave no report of the case.

L. SHARP.—The letter, of which you enclose a copy, is certainly not a contract. At the best it might be evidence of an intention to enter into one.

E. R.—Our recent past issues in which the Local Government Board and R.I.B.A. premiated designs for workmen's dwellings have been illustrated are those of April 10, 17, 24, May 1, 8, 15, 22, 29, June 5, 12, 19, 26, and July 10 and 24. The fourteen numbers can be had post free for 7s. 6d. The seventeen illustrated articles by Mr. Robert Thomson on "The Problem of the Perfect Dwelling," which appeared in our issues of from April 10 to Sept. 19, 1917, can still be had for 9s. 3d. post free. Suggested Types of Houses, issued by the Scottish Local Government Board, were given in our issues of September 4 and 11, post free 1s. 1d. The three series will be found of the greatest service to all likely to be engaged in the coming housing schemes.

Mr. John Denty, of Edgware Road, W., portmanteau manufacturer, and of Merchants Road, Bristol, timber merchant, who died last December, has left property of the value of £28,137. The testator gives £50 to his shopman, William Wilson, and £25 to his workman, John Cory Carver.

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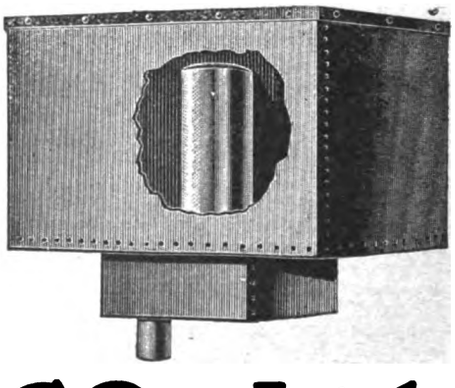

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October 9, 1918. Volume CXV.—No. 3327.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

Hall of a Country House in France, designed by Mr. A. H. Wolf, Paris.

Two Houses at Clevedon, Somersetshire. Lieut. John Harold Kennard, R.E., A.R.I.B.A., Architect.

Sheet of two sketches of a Corner Hou[illegible]sieux, France, by Mr. Maurice B. Adams, [illegible].B.A.

Royal National Eisteddfod Housing Competitions Prize Designs. Class A, Mr. J. Austin Laird, Licentiate R.I.B.A.; and Class B., Mr. H. Heathman, Licentiate R.I.B.A.

Currente Calamo.

We hope every reader will make a point of visiting the Exhibition of New British and Key Industries, which was opened in the absence, through illness, of Mr. Austen Chamberlain, by Mr. H. J. Mackinder, M.P., on Monday last at the Central Hall, Westminster, a stone's throw from St. James's Park Station, and will remain open till the 22nd inst. The exhibition, which has been organised by the Industrial Section of the Tariff Reform League, owes much to the energy of Mr. Graham Anderson, the secretary of that body, and to the co-operation of many leading firms engaged in the "Key Industries" concerned, among whom we should like to have seen more of our own, for no movement is of more importance to all of us than this, and architects and builders may take it from us that those who do not support it are only waiting to let the German in, presently, as of old, to rob us all right and left, and breed here another generation of spies and scoundrels. The exhibition is free to all, and a very informative catalogue issued should be obtained thereat by every visitor. It contains an admirable series of articles, written by experts in all the "Key Industries," and an introduction by Mr. H. J. Mackinder, M.P., in which the story of the shameful past surrender to the enemy alien is tersely told, and the only means of circumventing him in the future indicated. Among the exhibitors we want to draw special attention to are the Leeds Fireclay Co., Ltd., of 167, Strand, W.C.2, who show an excellent collection of their well-known fireclay goods of all descriptions; Messrs. Alfred Herbert, Ltd., Coventry, whose collection of high-speed tungsten steel tools is a notably fine one; and Bell's United Asbestos Co., Ltd., showing samples of asbestos goods as manufactured from crude asbestos to meet the varied requirements of the engineering, electrical, and moulding trades. The cardinal importance of this industry may be realised when it is remembered that every ship in the Royal Navy, merchant navy, every railway locomotive, and every steam engine uses asbestos in some form of packing, jointing, or insulating material.

Manchester is still making itself ridiculous over the Infirmary old site. At the City Council meeting last Wednesday Sir Charles Behrens, chairman of the Royal Infirmary Old Site Special Committee, moved that, as the Art Gallery Committee and the Libraries Committee had definitely decided that their requirements could not be met by the erection of a combined building, the Council should abandon altogether the idea of having one building for library and art purposes, and should direct the payment of Messrs. Crouch, Baker, and Savage (the authors of the selected design for the erection of a proposed library and art gallery on the Piccadilly site) of the sum of 500 guineas, the balance of the premium payable to them in accordance with the terms of the competition under which the design was submitted. The resolution was seconded, and there were cries of "Agreed," but Councillor Ross Clyne rose to oppose its passing. He moved that the matter be referred back in order that the Special Committee might discuss with the Town Clerk the question of finding ways and means for fulfilling the promise that there should be no disposition of the site until the public had had the opportunity of expressing its preference on the matter. Mr. Ross Clyne argued that a definite promise was repeatedly given by the late Sir James Hoy that nothing would be done with the site until the public had had an opportunity of expressing its feelings. The Town Clerk said his conviction was that what Sir James Hoy had in his mind at the time was that nothing would be decided until a town's meeting had been held. As to taking a poll of the citizens, the Council had no power to do that. Mr. Ross Clyne's proposal was ruled out of order. An amendment by Councillor Pierce providing that no policy in the matter should be adopted until there had been an appeal to the citizens at a town's meeting, or "any other method of getting the opinion of the public," was also ruled out of order. The resolution was approved, and the shunters have once more blocked the line!

The Ter-Centenary of the quaint little Ancient Chapel of Toxteth, Liverpool, has been fittingly and modestly celebrated. Erected to accommodate the congregation of Richard Mather, who, in November, 1618, preached his first sermon there, advocating "the true congregational way, between the two extremes of Presbyterianism and Brownism," the building itself appears never to have been "consecrated," although the earlier ministers were regularly ordained by the Bishop; and until the Act of Uniformity (1662) its ministers received the tithes of the district. Of the original structure probably very little remains, and opinions vary as to when, and to what extent, it was rebuilt. There is a stone over one of the lower windows bearing the date 1650. Part of the old woodwork is retained in the "Mather" pew, with the inscription "D. 1650. M." On the stone covering of a vault in the main aisle is a small brass with the inscription, "Edward Aspinwall, of Tocksteth Park, Esquire. Departed this life in March the Twenty-ninth, A.D. 1656." The chapel contains some very interesting mural tablets. One is erected to the memory of "Jeremiah Horrox, who foretold, and was the first to observe the transit of Venus across the sun's disc, Nov. 24, 1639." He is said to have been a pupil of Richard Mather, and to have been buried within the precincts of the chapel. In the little graveyard adjoining is laid the dust of many who were once leaders in science, religion, philanthropy, art, and politics. Services of commemoration were held on Sunday last, the preacher in the morning being the Rev. L. P. Jacks, M.A., D.D., LL.D. (editor of the *Hibbert Journal*). A tablet has been placed over the door in Park Road bearing this inscription:—

1618—1918.

THE ANCIENT CHAPEL OF TOXTETH.

For three hundred years this has been a meeting-place of those who have sought in the free worship of God strength and patience for the service of man.

Here Richard Mather, called by the people of Toxteth to "instruct them in the things of God," began his ministry Nov. 30, 1618.

In commemoration of the ter-centenary, and as a grateful tribute
to the memory of those who were pioneers of liberty in religious thought and fellowship,
this tablet was erected by the congregation in 1918.

Dr. Addison, orating last week to some Manchester doctors, hoped that the Ministry of Health Bill will reach its next stage and that when it emerges into the daylight it will be found adequate. No-

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body can better appreciate the results of "C 3 conditions of housing and work" than the doctors who help the victims to put up some sort of fight for their lives. But some of them might well have asked what measures the Government are taking to abolish these scandals, and where are the marvels the Insurance Act was to achieve? It is not only at the bedside or in the surgery that slums and squalor appear to be the curses that they are. Governments may reasonably be expected to know what their own officials and advisers have long been telling the world. The facts are not new, or newly discovered. What is new is the popular impatience; the general sense of shame and guilt for this state of things. Yet Ministers do not as yet give the impression that they are preparing to attack these problems with the vigour that is necessary, or corresponding to the zeal and anxiety of the nation. It is mere giff-gaff for Ministers to declaim against a C 3 civilisaton. A bold and unflinching policy is needed more urgently.

The Collier bequest of pottery makes a notable addition to the art treasures of the city of Manchester. It includes a number of representative pieces of Chinese porcelain of the best periods, which are interesting historically, not only because of the light they throw on the art craftsmanship of the Chinese, but also because of the profound influence of Chinese porcelain on European pottery wares of the last 200-300 years. The section consists mainly of porcelain, dating from the fifteenth to the eighteenth centuries, and it has been arranged as far as practicable in chronological order, beginning with the case in the end of the gallery containing examples of the Ming Dynasty. The next case contains a rather miscellaneous collection of eighteenth century pieces. On the top shelf are a number of good examples of the Yung Cheng period (1723-1735 A.D.)—a time of transition in Chinese porcelain, when technique was assuming the upper hand and artistic quality was being relegated to a secondary position. Some beautiful pieces with single-colour glazes made during the eighteenth century are shown in the two opposite cases. The first case contains a few large pieces of mazarin blue with gold decoration, which should be compared with the powder blue bowls and plates in one of the table cases. The other case contains several fine examples of turquoise crackle glaze and of the solid chrome green so characteristic of this period. In the table case opposite are a few specimens of Chinese porcelain made for the European market in the eighteenth century—an interesting link with the European porcelain in the adjacent room, which contains the other portion of the Collier pottery bequest. The most important sections of this are the Italian decorated pottery of the sixteenth century—the devotional medallion in the centre of the case is perhaps the most interesting—and the Bow, Chelsea and Worcester porcelains. There is also on view in the first room a collection of carved jade, rock crystal and other stones on loan from Mr. John Yates, of Castleton.

After serving in the capacity of Director of Ceremonies and subsequently for some years as Secretary, Mr. Chas. E. B. Kibblewhite was on Monday last, at the Café Monico, installed as Master of the Renaissance Lodge of Freemasons, No. 3408, of which he was a Founder. This Lodge, which is not yet ten years old, holds a high record for charity, likewise for its exposition of the ritual, and the working at the installation ceremony was no exception, the onus of the work in the Lodge falling upon Mr Hubert Price, the outgoing Master, to whom a handsome jewel was voted to mark the appreciation of his services in the chair. The new Master appointed as his officers: Messrs. Chas. Ives, S.W.; George Colley, J.W.; A. S. Jennings, Treasurer; E. W. Wightwick, Secretary; Cecil E. Campbell, D.C.; W. Falkner, S.D.; F. Dakin, J.D.; T. A. Hall, A.D.C.; J. Bobby, Almoner; J Wood, Organist; Chas. Harrison, Assist. Sec.; John Cayley, I.G.; Thos. Norton, Thos. Press, and W. M. Franks, Stewards; H. Passenger, Tyler. At the dinner which followed, one of the principal speakers was Mr. William Woodward, F.R.I.B.A., who, in the capacity of Past Grand Superintendent of Works, replied for the Grand Lodge of England. The installation of Mr. Charles E. B. Kibblewhite marks the commencement of his second period of Mastership, he having occupied the highest position the Lodge can bestow in his mother Lodge—The Strand, 1987—in 1904, in which he is the present Secretary and Almoner. He is a P.Z. of the Playgoers' Royal Arch Chapter, and Master-elect of the Prince Leopold Lodge of Mark Master Masons. He is also a Founder, and has been for eighteen years Secretary of the Strand Lodge of Instruction. Outside Freemasonry he is the hon. secretary of the Playgoers' Club, and incidentally a member of the staff of The Building News and The English Mechanic. We wish the Renaissance Lodge a successful year under his rule.

INTERNATIONAL SOCIETY OF SCULPTORS, PAINTERS AND GRAVERS.

The twenty-fourth exhibition of the International Society of Sculptors, Painters, and Gravers, at the Grosvenor Gallery, from which, we are glad to make it known, enemy aliens have been excluded by special resolution of the Council, is of quite average interest, barring the paucity of exhibits coming under the head of the artists which rank first in its title. This is doubtless due to present war conditions, and the generally low-water ebb of sculpture to-day in England, for which, as we have more than once pointed out recently, the Royal Academy is in a very great measure responsible.

As far as possible the painters are to the fore with not a few contributions of decided interest. Mr. William Strang, A.R.A., the President, is well represented by four exhibits. The first is a good portrait of Mr. Justice S. King Farlow, Judge of the Supreme Court of the Gold Coast (1); the second an allegorical subject, "The Great Mother" (5), which will divide the admiration about equally between those who may accept it as a sacred picture or one of the many Pagan goddesses of Fecundity, from whose gaze Father Time is retiring with evident consciousness of his defeat. "The Lady in the Red Hat" (33) is decidedly more piquant, if only by contrast with her jacket, which is of the present green, brilliant, but as crude as some of the fashionable garments of the munition workers. Much more staid, as doubtless befits his office, is the "Portrait of Mr. J. E. Gaffney" (60), the school clerk at Eton College, possibly the one of the four likely longest to enhance its artist's reputation. Mr. Charles Shannon, the vice-president, does not exhibit this time, and his absence is a loss.

Mr. William Nicholson scores best with "Le Bonne Tricolore" (12). We do not care very much for his "Welsh Landscape" (23), with its somewhat scraggy Welsh cattle and the somewhat lean-looking flat pasture, which is presumably their chief sustenance. More lively in conception and decidedly better in execution is "Madam X as Megan," in Tan-y-bryn (29).

Mr. Robert Anning Bell's only contribution is "The Sleeping Musician" (20), quite up to his reputation. Sir John Lavery, A.R.A., has also only one picture, but it is a fine one—a portrait of "Lady Evelyn Hely-Hutchinson" (51).

Mr. McEvoy is, as usual, fertile. Of his eight subjects, "Miss Henry (Red Cross portrait)" (18) is one of the best. That of Major-General E. E. Strickland, C.B., C.M.G., suitably signalises his marriage, in fitting congratulation on which it has been presented, and in commemoration of which it will doubtless be treasured. That of the "Hon. Mrs. Edwin Montagu" (36) is apparently unfinished. "The Rt. Hon. Augustine Birrell, P.C., K.C., M.P." (40) is characteristically quizzically chirpy, and decidedly a success. "Lady Lytton" (50) is good and gracious; but "The Rt. Hon. David Lloyd George, P.C., M.P." (291) must have aged considerably lately, so haggard is the face.

Mr. Oliver Hall has two quiet but very satisfactory pictures. That in oil of "Bolton Abbey, Yorks" (31), is excellent, and his water colour of "Much Wenlock Priory" (277) is almost equally effective. Mr. Gerald F. Kelly is fairly fortunate with his one subject, "A Burmese Girl" (48). Mr. George W. Lambert has several good ventures—"Jericho" (34), a portrait, "Constant Lambert" (37), and a couple of drawings, "The Fair Maid" (280) and "A. J. Munnings" (286). Mr. A. Ludovici sends four telling London subjects, "Somerset House" (13), "St. Paul's, from Wellington Street" (22), both in oil, and another view of "Somerset House" (227), and "Charing Cross Bridge" (250), the two latter in water-colour. His oil-painted portrait of "An American Red Cross Nurse" (102) is also good. There is nothing from Mr. William Orpen, A.R.A., whom all will miss. Mr. A. D. Peppercorn's only picture is "The Harbour." Mr. Glyn Philpott, A.R.A., sends an "Italian Soldier" (14), and "Boy with a Spear" (21), both well painted, and not lacking in character.

Mr. Charles Sims, A.R.A., has one of the best pictures in the show, "The Fox" (3). The delicate rendering of the foliage, and the charming effect of the clear blue sky behind it contrast most effectively with the foreground, and the rendering of Renard as he silently steals to his snug and safe retreat is excellent.

Two welcome contributions by Lieut. G. H. Fulwood are "Amiens: July 18," (11) and "The Somme Valley" (45), both accurate souvenirs of timely interest, as is also 2nd Lieut. Geo. H. Day's "Ypres,

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1915," (39). Mr. Harrington Mann has done well with "Annabel" (58), and better still with "Miss Alice Trudeau" (62), one of the best portraits in the room.

Mr. Louis Sargent's three flower-pieces are equally delightful. The "Dahlias, with blue background" (78), will probably be preferred, but their companion subject, "Dahlias, with green background" (94), is almost equally pleasing, and the brilliancy of his "Geraniums" (140) is a bright and telling contrast. Mr. Ronald Gray's "In a Factory, during an Air Raid" (89), is one of the best of the many pictures we have seen of its kind, so well is the fright of the inmates caught as portrayed in their faces. Mr. F. Upton has a fairly good portrait of "Viscount Milner" (91). Mr. E. Barnard Lintott shows decidedly the best landscape in the room—"Autumn: Sussex" (111). Mr. S. J. Lamorna Birch is always welcome with his bits of beautiful landscape, of which "A Small Holding" (104), "The Machrw River, North Wales" (117), and "Stream in My Garden" (122), are good examples. Lieut. James Quinn's "Mont St. Quentin after the Australian Attack" (211) has a keen topical interest for all of us just now.

In the Small Gallery we have heartily to congratulate the Duchess of Rutland on her two very fine pencil drawings, one of "The Duke of Rutland, K.G." (232), and the other of "The Marchioness of Rutland" (247). The vigour of the first is in marked contrast with the delicate treatment of the second, and each manifests an aptitude which should encourage so promising an artist.

In the Private Gallery Mr. Nelson shows a series of spirited etchings, and one oil-colour of naval scenes in the war, which no visitor should miss (339—346). The oil painting shows the Cornish fishing craft leaving Scarborough after the herring fishing, and the etchings illustrate various incidents off Dover, Ramsgate, and elsewhere, and two bombardments of the enemy coast by British ships.

The sculpture is poor and scanty. Katherine Smith's small full-length bronze of George Bernard Shaw is about the best. The only others worth mention are by Miss Clare Sheridan in the Small Gallery, and a passable "Study of a Little Girl" (467), by Edith Bateson, in the Corridor.

Our Illustrations.

HALL OF A COUNTRY HOUSE IN FRANCE.

The illustration reproduced from a very handsome water-colour drawn by the designer of this apartment, Mr. A. W. Wolf, of Paris, shows a notably furnished interior rich in antiquities and hung with tapestries. The work forms part of a country house in France. Mr. Wolf has, we understand, been for a long while professionally associated with Messrs. Maple and Co.'s Paris house, and this is one of that firm's undertakings.

TWO HOUSES.—CLEVEDON, SOMERSETSHIRE.

This drawing was exhibited this year at the Royal Academy, showing a pair of Somersetshire houses built on a site sloping towards the Bristol Channel (of which they command a fine view), and they stand close to the old castle. The wallings are of local pennant stone, which is of all shades, from deep blue to light brown, and the roofs are covered with handmade Hartshill tiles. The floors are of narrow pitch pine tongued and grooved, and the majority of the finishings of oak. The far bay in the sketch is of oak half timbering, and the panelling on the near bay of beaten lead. Lieut. Harold Kennard, A.R.I.B.A. is the architect.

A CORNER HOUSE IN LISIEUX, FRANCE.

The chief characteristic of this well-known delightful old Normandy town in the valley of the Orbiquet and Touques consists of the remarkable number of beautiful wooden houses erected during the fourteenth, fifteenth, and sixteenth centuries. These charming buildings have induced topographers to designate Lisieux as "the Chester of France." Some of the façades alluded to are richly ornamented by exquisite carvings, and among these perhaps the best are two fronts near the cathedral doorway in the Grande Rue, and also certainly the "Vieux Manoir," situate in the Rue des Fevres, with its elaboration of fine sculptures. The corner block of shop and house, shown by the accompanying pen-and-ink sketches, possesses scarcely any elaboration of the kind, and very little by way of description is needed, the beauty of the example being so self-evident. The structure is incomparable in some respects, and holds its own by reason of its fine position. From whatever standpoint the house is seen the composition looks absolutely right and beautiful. This satisfactory effect is mainly due to the natural manner in which it grows out of the site, no effort being attempted to give the elevation anything approaching a corner feature.

ROYAL NATIONAL EISTEDDFOD HOUSING COMPETITIONS—PRIZE DESIGNS.

The awards made by the adjudicators were published in our issue for August 21 (page 135), and particulars as to the conditions appeared on April 3 last. To-day we reproduce the winning desgn for Class A, of which Mr. J. Austin Laird, Licentiate R.I.B.A., of Bristol, is the author. These cottages comprise a living-room, scullery and three bedrooms. The bathroom is partly under the stairs and opens out of a spacious front lobby. Each bedroom has a fireplace, and the living-room is spacious and convenient. The fireplace, however, faces the door. The block plan is essential, as showing the adjuncts to the houses. The middle houses having a very narrow garden plot, have extensions at the rear. Sir Alfred Mond, Bart, M.P., gave the premium. The winning design by Mr. H. Heathman, Licentiate R.I.B.A., of Kilmalcolm, Renfrewshire, for the Class B, shown on our second sheet, is for parlour dwellings, with scullery and three bedrooms. Mr. E. T. John, M.P., furnished the prize. The materials intended to be used are mentioned on the architects' drawing. The lay-out of these dwellings is illustrated on the sheet, the outbuildings being set away from the main building at the back of the garden plot, where they are set in a continuous line. Of these appurtenances we give an elevation and section. The bath and boiler in each cottage occupy a small separate apartment near the back door. We shall shortly give illustrations of the other prize plans in these housing competitions in South Wales.

Few churches maintain a stranger custom than that of "Ringing for Gofer," observed each Sunday evening of October and November at Newark Parish Church. More than three centuries ago a wealthy merchant named Gofer lost his way one October night in the forest then surrounding Newark, but was guided home by the bells, and, in gratitude, bequeathed a goodly sum for the Newark bellringers on condition that they "rang for Gofer" for two months every year.

THE SOCIETY OF ARCHITECTS AND DATA FOR COTTAGE-BUILDING.

Some time ago, at the request of the Committee of the Privy Council on Scientific and Industrial Research, the Council of the society submitted to that body a programme of its proposals for research into the question of the greater utilisation of local materials in building construction. While this programme was under consideration by the Committee the housing question became more acute, particularly in regard to the supply of cottages, and the society was asked for the time being to concentrate its efforts on obtaining certain data from its members, instead of proceeding with the more elaborate scheme referred to.

The co-operation of the members of the society is therefore invited in supplying data relating to local methods and building materials adopted and used in various parts of the country in connection with the erection and design of cottages, together with information as to the possibility of combining standardised structural units with local materials, and finding suitable artificial substitutes for such building materials as it is difficult or impossible to obtain at the present time, and which are likely to be scarce for some time after the end of the war.

The object in view is the effecting of economy in the construction and erection of dwellings and the eliminating so far as possible of transport and other difficulties which might hinder production.

The following may be given as examples of the data required:—

(*a*) Traditional methods of using and bedding pantiles or small waste slates, or other roofing materials, which may have proved thoroughly reliable.

(*b*) Methods of building walls with thin bedded stone such as slate or flagstones, with rubble such as granite, ragstone, whinstone, etc.

(*c*) Methods of using local waste materials for any of the purposes required in cottage building.

(*d*) Particulars of any porous stones or stones liable to sweating, and any local methods of avoiding the difficulties to which they give rise.

(*e*) Methods of mixing and using local limes and cements which have proved valuable and reliable for any purpose.

(*f*) Local materials other than sand, which have proved valuable as aggregates for mortar.

(*g*) Methods of using combinations of materials:—Brick and stone, brick and flints, rubble with concrete dressings, etc.

(*h*) Methods of using new materials or new methods of using old materials, likely to prove valuable either locally or generally for cottage building.

It will be convenient if the information in reference to any matter can contain the following particulars and be given under the following headings:—

(1) Exact description of the material, or the method of using a material, or both, as the case may require.

(2) Locality where the material is found or where the method is employed.

(3) The experience on the strength of which the reliability of the material or method recommended is based.

(4) Any suggestions as to the extended or as to new uses as to material or method in question.

(5) Pre-war cost of material or method, when known.

(6) Any other information or observations.

It is requested that this information be sent to the secretary not later than October 31, and that members who may not at the moment be able to give the information but are desirous of co-operating with the society should communicate their views on the subject to the secretary.

The reasonable out-of-pocket expenses incurred by members in obtaining the data will be refunded by the society, provided the cost does not exceed in any individual case an amount to be previously sanctioned by the Council of the society.

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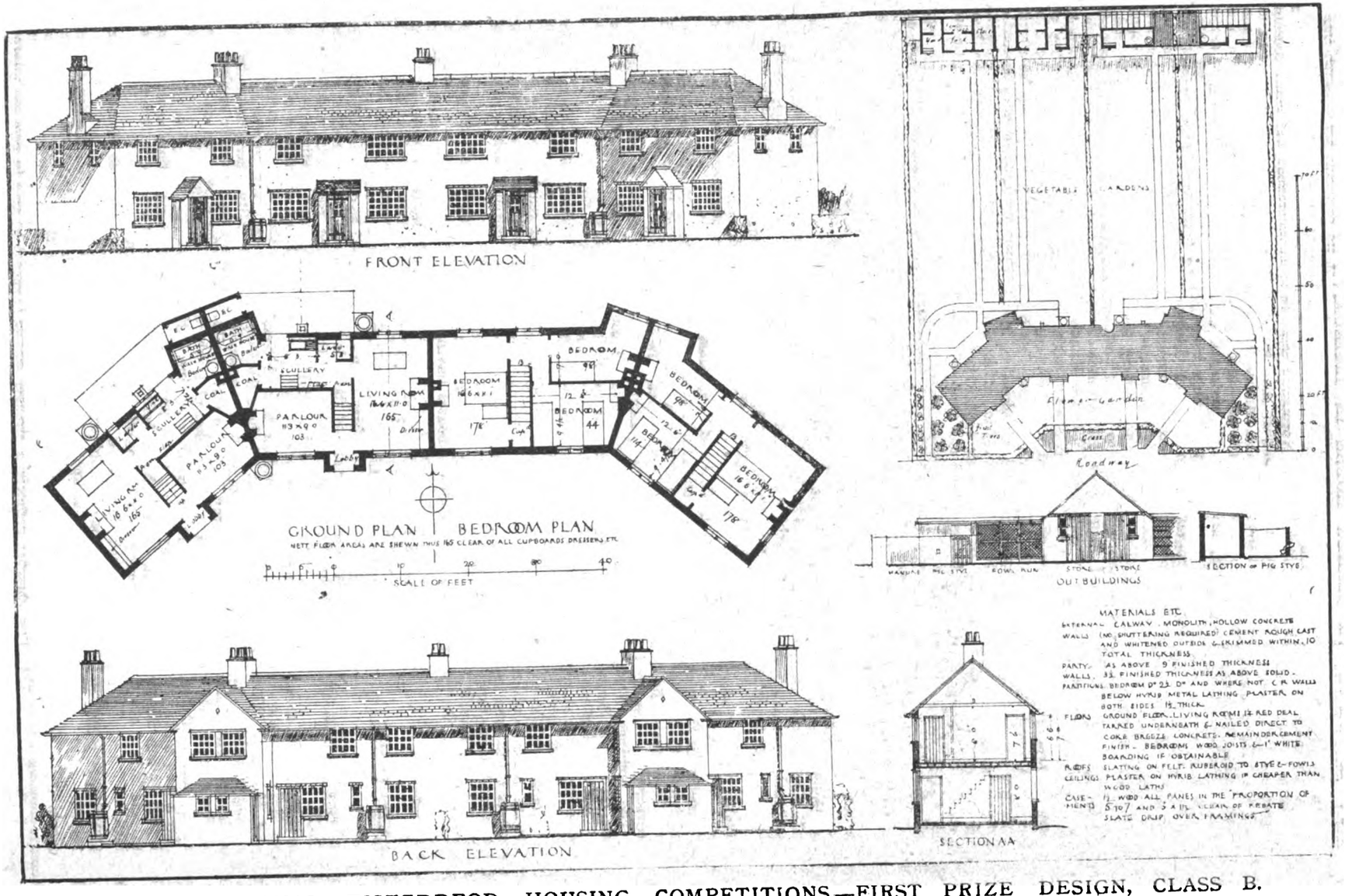
FRONT ELEVATION
GROUND PLAN
BEDROOM PLAN
NETT FLOOR AREAS ARE SHEWN THUS 165 CLEAR OF ALL CUPBOARDS DRESSERS ETC
SCALE OF FEET
VEGETABLE GARDENS
Flower Garden
Roadway
OUT BUILDINGS
SECTION OF PIG STYE
BACK ELEVATION
SECTION AA
MATERIALS ETC.
EXTERNAL WALLS: CALWAY MONOLITH HOLLOW CONCRETE (NO SHUTTERING REQUIRED) CEMENT ROUGH CAST AND WHITENED OUTSIDE & TRIMMED WITHIN TO TOTAL THICKNESS.
PARTY WALLS: AS ABOVE 9" FINISHED THICKNESS
PARTITIONS: AS ABOVE SOLID. BEDROOM 2ND FLOOR AND WHERE NOT C.H. WALLS BELOW HYRIB METAL LATHING PLASTER ON BOTH SIDES 1½" THICK.
FLOORS: GROUND FLOOR LIVING ROOMS 1½" RED DEAL TARRED UNDERNEATH & NAILED DIRECT TO COKE BREEZE CONCRETE. REMAINDER CEMENT FINISH. BEDROOMS WOOD JOISTS & 1" WHITE BOARDING IF OBTAINABLE
ROOFS: SLATING ON FELT. RUBEROID TO STYE & FOWLS
CEILINGS: PLASTER ON HYRIB LATHING IF CHEAPER THAN WOOD LATHS
CASEMENTS: 1½" WOOD ALL PANES IN THE PROPORTION OF 5 TO 7 AND 3 X 1½" CLEAR OF REBATE SLATE DRIP OVER FRAMINGS

ROYAL NATIONAL EISTEDDFOD HOUSING COMPETITIONS.—FIRST PRIZE DESIGN, CLASS B.

Mr. H. Heathman; Licentiate R.I.B.A., Architect.

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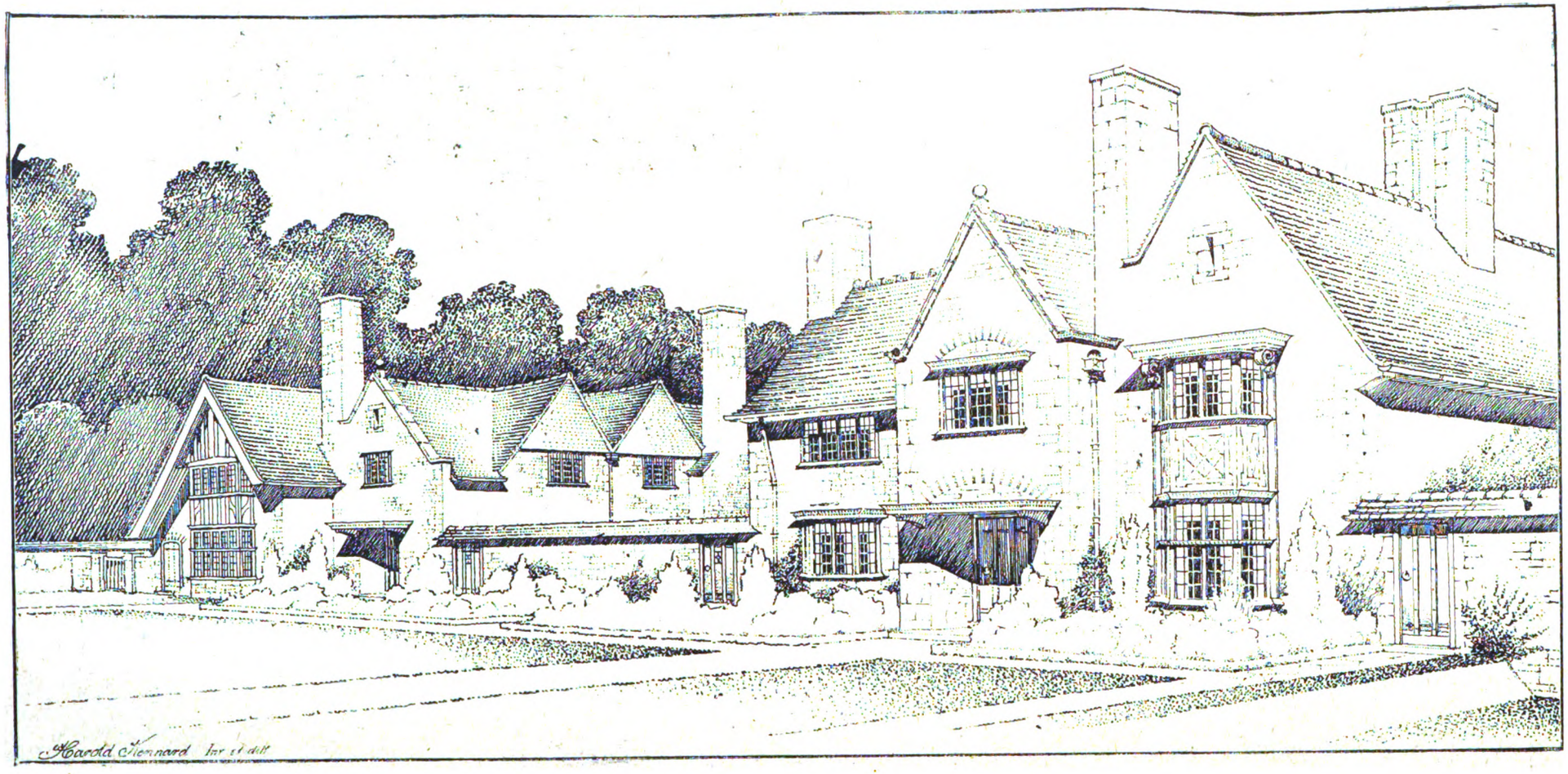

TWO HOUSES AT CLEVEDON, SOMERSETSHIRE.

Lieutenant JOHN HAROLD KENNARD, R.E., A.R.I.B.A., Architect

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Wolf, Paris.

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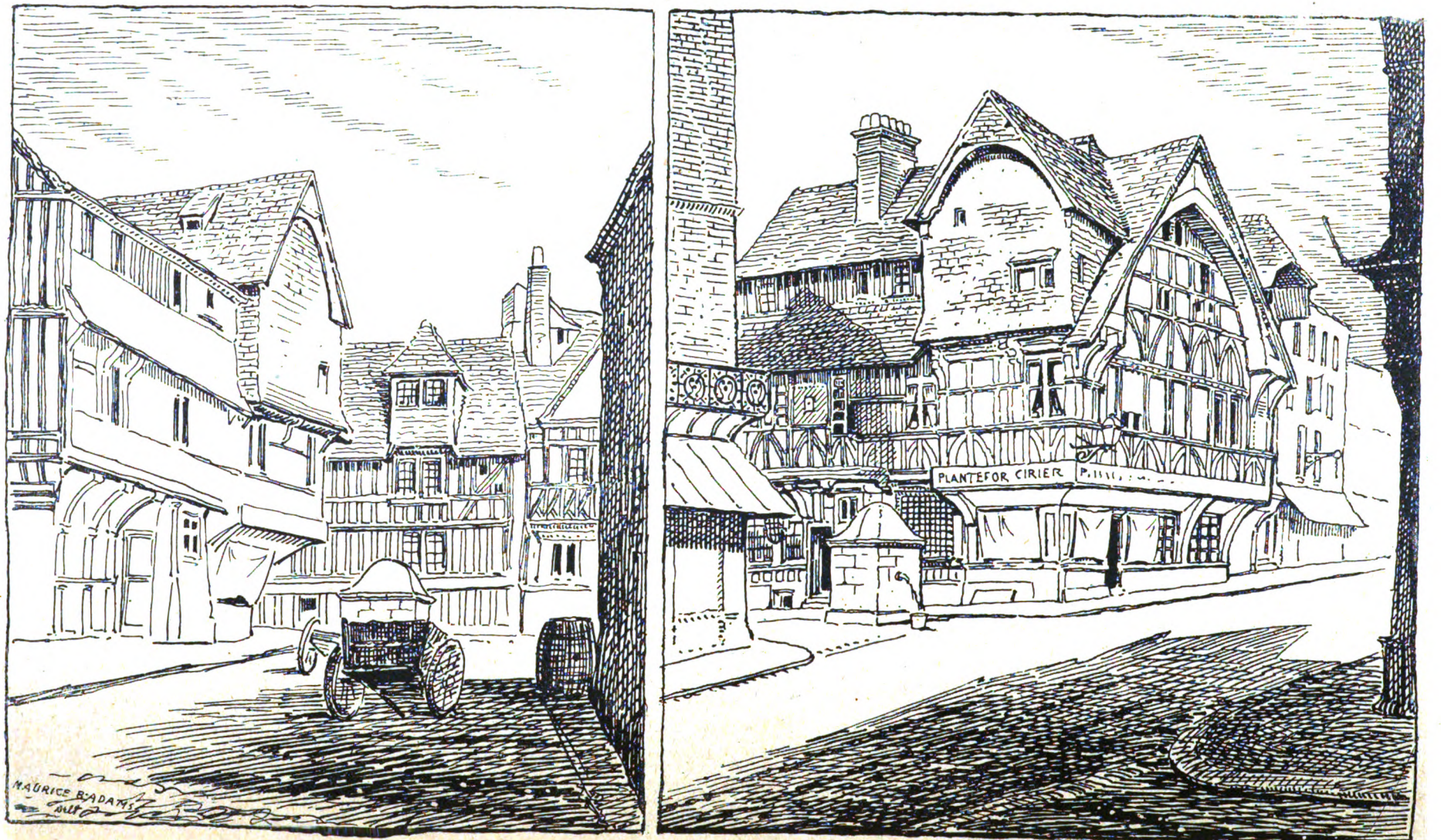

SHEET OF TWO SKETCHES OF A CORNER HOUSE, LISIEUX, FRANCE: BY MAURICE B. ADAMS F.R.I.B.A.

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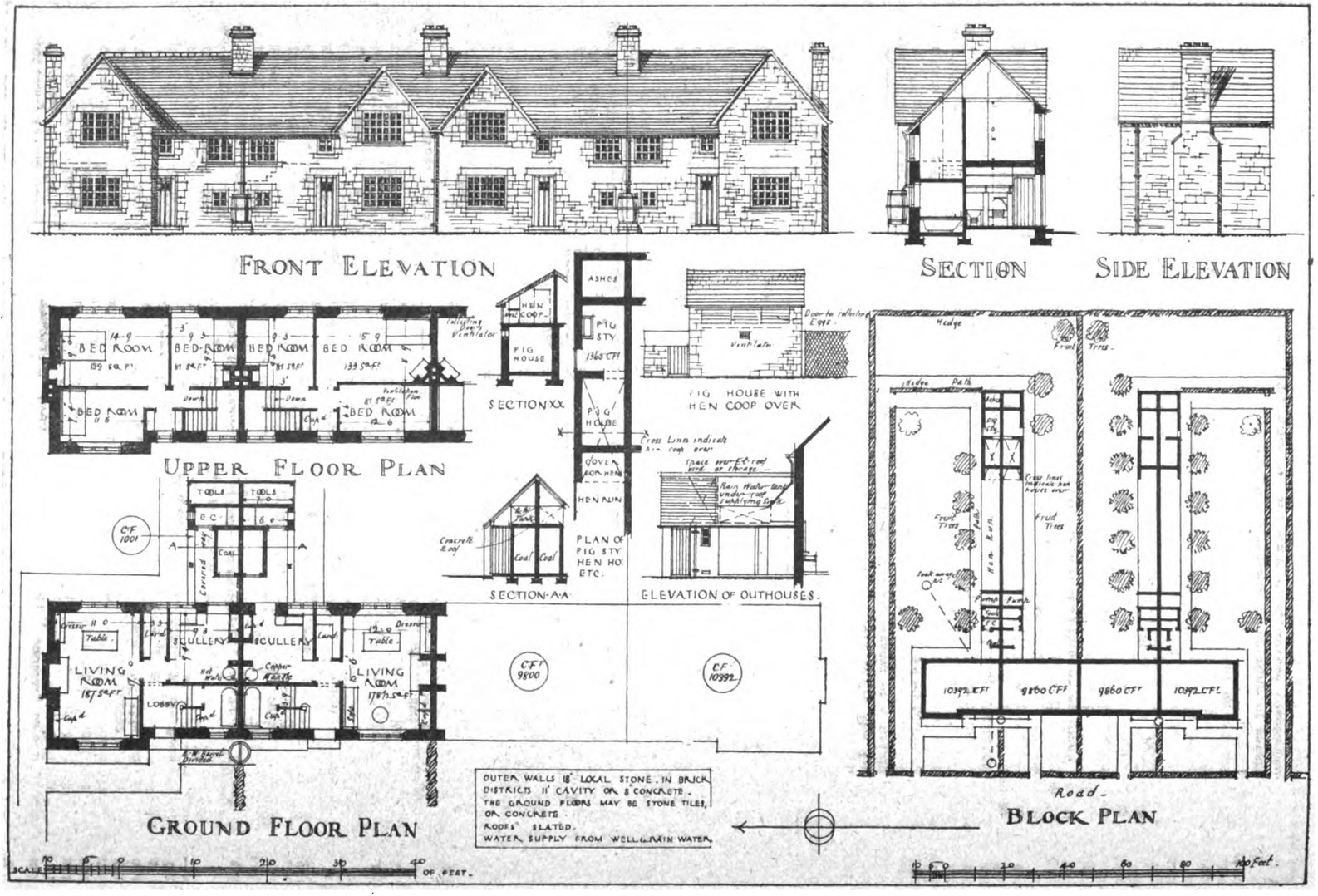
FRONT ELEVATION
SECTION
SIDE ELEVATION
UPPER FLOOR PLAN
SECTION XX
PIG HOUSE WITH HEN COOP OVER
SECTION A-A
PLAN OF PIG STY HEN HO ETC.
ELEVATION OF OUTHOUSES
GROUND FLOOR PLAN
BLOCK PLAN
OUTER WALLS 18" LOCAL STONE. IN BRICK DISTRICTS 11" CAVITY OR 8" CONCRETE.
THE GROUND FLOORS MAY BE STONE TILES, OR CONCRETE.
ROOFS SLATED.
WATER SUPPLY FROM WELL & RAIN WATER.
SCALE 10 0 0 10 20 30 40 OF FEET.
10 0 0 20 40 60 80 100 Feet.

ROYAL NATIONAL EISTEDDFOD HOUSING COMPETITIONS.—PRIZE DESIGN, CLASS A.

Mr.. J. AUSTIN LAIRD, Licentiate R.I.B.A., Architect.

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ECONOMY IN THE DESIGN OF CONCRETE BUILDINGS.

BY C. W. MAYERS.*

Upon the designing engineer of concrete buildings rests the big responsibility of conservation of building materials. The mere fact that concrete is composed of cement, sand, and stone, of which there seems to be an excellent supply, does not in any way relieve the designer of concrete construction of the obligation of careful study of the work in hand in order that no excess of material be used. Most errors made in concrete design are not easily recognised even by experienced estimators of building construction. For instance, hidden away inside a column there may be reinforcing steel which should be elsewhere doing work at less expense to its owner, as would have been the case had the designing engineer given proper thought to the design of this column. A large percentage of the floor space occupied by columns might be storage space for the same reason. The beams may contain an excess of steel reinforcement simply because it was less trouble to call for straight top rods to take care of negative bending than it was to determine where and how bends could have been made in order to have used the least amount of reinforcement in the design. Flat slabs may have a number of individual rods over the top of each column head, where a few more bottom rods should have been bent up to take care of this negative bending. And yet this entire building may have been designed in accordance with the recognised standards of concrete design. These errors are not errors in computations, but are errors of careless design, and the result is dire waste of material.

ECONOMY IN DESIGN OFTEN OVERLOOKED.

In most cases building plans are O.K.'d by responsible engineers authorised by the city to pass upon these plans before the work is allowed to proceed. Errors in computation are usually detected in this process, but who ever heard of one of these authorised engineers returning a set of plans with suggestions for a more economical design? The design either "gets by" or comes back for correction on account of errors in computation, etc.

Hence, if the designing engineer does not study economy in the design of his work, he may be reasonably sure it will get very little such study from anyone. Designs prepared without this special study are sure to show a waste of building material, and the building is no better, and serves no better purpose, because of this extra expense.

Recognised standards are observed by most designers of concrete buildings as regards stresses and strains, factors of safety, etc., but unfortunately no rules, tables, or data are at hand which will solve the problem of maximum economy in the choice of the various methods of concrete construction which may be used. Each building presents new problems. It is a case of careful study in an intelligent way and the designer must do this work well if he would "do his bit" and at the same time keep or build up his reputation.

Is there any position more humiliating to the designing engineer of a contemplated structure than to have a bidder who is estimating the cost of this work submit to the prospective owners a more economical design based on the same fibre stresses as were used in the original lay-out? This is not an uncommon event, and uncomfortable complications always arise.

INSUFFICIENT ATTENTION TO COSTS.

A general survey of conditions and inspection of the possible methods of construction usually constitute the first thought given to a new problem of structural design. By this inspection a process of elimination is set up, and finally the engineer considers only a few schemes which could be well employed to give the owner a structure suitable for his purposes. The next step usually consists of viewing the several schemes from every angle in order to study their individual merits. Each lay-out possesses different advantages, some of more value than others, but each one would answer the purpose very well. For instance, a beam and girder type of floor construction may offer advantages in the way of hanging shafting, if the building is to be used for certain types of manufacturing. Column spacing would perhaps work out to better advantage in one scheme than in another. Thus the discussion continues, with here and there a remark about the probable cost of this and that. A decision is usually made in favour of the scheme offering the most advantages even though they are trivial. The plans are drawn up on this basis, and the work proceeds. The detailed design is finished with about the same attention to costs as have been given to the selection of the type of construction used. Generally, the owner of the completed building is satisfied, being ignorant of the fact that he could have had just as good a building for less money.

The average concrete designer makes no claim to being an estimator. In fact, he does not think it is necessary to be an estimator even of the materials with which he works. It is a fact that a large majority of men employed in the design of concrete buildings have hardly any idea of the cost of the work they are laying out, and what is more, they do not know how to find this out for themselves. Surely, if an engineer designed a structural steel girder he could tell with reasonable accuracy what it would cost by computing the weight and getting the market price of the structural steel and the labour cost of erection. Estimating the cost of concrete work is a little more complex, but each step is very similar and the process is the same.

DESIGNER SHOULD CALCULATE COSTS.

A designer of concrete structures should think continually of costs, but in order to think intelligently of the cost of his work he must know how to calculate approximately the cost of his design. In no other way is he able to determine which one of his studies will serve his purpose at the least expense.

It should be borne in mind that in making designs for comparative costs, it is not necessary to work to as great a degree of accuracy as for the finished plans. Rough designs, accompanied by rough sketches, will furnish enough information for his study. In case the comparative costs of two schemes should work out the same, a more careful design might become necessary. A little practice on the part of the designer will soon reveal to him to what degree of accuracy he must work in order to get satisfactory results.

The process of estimating these various designs for comparative cost purposes is not nearly as difficult as may be supposed. Concrete is measured by the cubic foot or cubic yard, forms by the surface measurement in square feet, and reinforcement by the pound or ton. After the quantities have been calculated for the various designs, unit prices are fixed, and the total cost of the member estimated. It is usually here that the engineer throws up his hands. In fact, it is very likely that he knows but little about the prices of this class of material and labour, and in his rush of work he has not kept in touch with the fluctuations, and feels he does not have time to inform himself properly on this subject. Again, it should be understood that it is not necessary to fix absolutely accurate unit costs to these quantities in order to obtain reasonably accurate cost comparisons. As long as the same unit costs are used for similar types of work in the various designs, the comparative costs will be surprisingly accurate. In fact, some of the unit costs may be in error 25 per cent. or 30 per cent., and yet the resulting costs will show unquestionably which type of construction should be used. For example, the quantities for two designs (a) and (b) for an interior column are given here, and these quantities are priced for current normal conditions, under "Estimate A," and another estimate for the same quantities with the unit prices grossly in error is shown in "Estimate B."

It will be seen that although the comparative total costs of the schemes (a) and (b) are entirely different in the two estimates, the resulting comparative costs in both "Estimate A" and "Estimate B" show conclusively the design (b) is the cheaper column to build. It will also be noticed that the percentage of cost saved by using design (b) is about the same in both estimates. However, the alert engineer will soon become as interested in having his unit costs in accordance with current prices of materials and labour as he is in having his design correct.

ESTIMATE A. (Scheme A.)	
Conc. (1 : 1½ : 3), 52 cub. ft. at 36½c.	$18.98
Forms, rd. steel	15.00
Reinfct. (vert.) 514 lbs. at 5c.	25.70
Spirals, 264 lbs. at 5½c.	14.52
Lost fl. space, 7/10 sq. ft. at $2.75	1.92
Total	$76.12
(Scheme B.)	
Conc. (1 : 1 : 2), 52 cub. ft. at 43c.	$22.36
Forms, rd. steel	15.00
Reinfct., 245 lbs. at 5c.	12.25
Spirals, 264 lbs. at 5½c.	14.52
Lost fl. space, 7/10 sq. ft. at $2.75	1.92
Total	$66.05

ESTIMATE B. (Scheme A.)	
Conc. (1 : 1½ : 3), 52 cub. ft. at 27c.	$14.04
Forms, rd. steel	19.00
Reinfct., 514 lbs. at 3¾c.	19.28
Spirals, 264 lbs. at 4c.	10.56
Lost fl. space, 7/10 sq. ft. at $3.50	2.45
Total	$65.33
(Scheme B.)	
Conc. (1 : 1 : 2), 52 cub. ft. at 32c.	$16.64
Forms, rd. steel	19.00
Reinfct., 245 lbs. at 3¾c.	9.19
Spirals, 264 lbs. at 4c.	10.56
Lost fl. space, 7/10 sq. ft. at $3.50	2.45
Total	$57.84

DESIGN CALLING FOR LEAST MATERIAL NOT ALWAYS CHEAPEST.

Contrary to the opinion of most engineers, the concrete building design calling for the least amount of material is not always the cheapest building to erect, as such a building may call for much more labour. Form work is a big factor in the cost of concrete buildings, and this phase of the operation must be given careful consideration in order to simplify the construction of the form work as much as possible. Study must be made also to determine whether the complexity of forms in a comparatively light design would not make the final cost of the building in excess of a building designed of simpler yet heavier construction. Concrete floors designed on the flat slab method sometimes have considerably more material in them and yet work out cheaper than a beam and girder type designed for the same conditions. Placing reinforcement costs more per ton and forms more per square foot in a beam and girder construction than the same operations in a flat slab construction. In laying out floors of the beam and girder type, the addition or omission of one beam per bay may influence the cost of the design a great deal. Changes in column spacings will also have the same effect. It is only by making the design of a typical floor bay of the various schemes considered and getting the quantities and costs of these schemes that it will be possible to tell definitely which method should be used. Many times concrete columns should be composed of a richer mix of concrete and have less reinforcement. In a building of several stories it is necessary to devote considerable study to the design of columns in order to locate the point where the mixes should change, where spirally reinforced columns should be introduced, and also to consider carefully the loss or gain of floor space occupied by columns. It will be necessary to make several sketch designs and calculate the cost of each. Thousands of dollars may be wasted by improper column design, and still the error is one which would not readily attract attention. There is a certain type of design for every part of the construction which will show maximum economy, and it is up to the designing engineer to calculate the cost of his various

* Read before American Concrete Institution.

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designs and determine for himself which one should be used.

OBTAINING UNIT PRICES.

Up to this point this article has emphasized, principally, the necessity of making several preliminary designs of the various members of a concrete building, and calculating the cost of each design before the final lay-out is begun. Not much light has been shed upon the method of obtaining unit prices to fix to the quantities of material and labour. Unit prices are subject to wide fluctuations. Markets, labour, location of the work in question, speed of the operations, etc., and many other items enter into the making of these costs. However, as stated before, these unit prices need not of necessity be extremely accurate, and the designing engineer need not feel that he cannot price closely enough to obtain fairly accurate results.

A list of approximate unit prices have been tabulated here which may be used to calculate the comparative costs of the principal members in a concrete building. Judicious use of these unit costs will enable the designer to incorporate in his design the most economical methods, and at the same time develop a keener eye for economical construction.

Concrete. per cu. yd. (1:2:4 mix).		
Cement, 1 2/3 bbls. at $2 per bbl. at the job		$3.33
Sand, ½ cu. yd. at $1.50 per cu. yd. at the job		.75
Crushed stone, 1 3/10 tons at $2 per ton at the job		2.60
Plant, cost per cu. yd.		
Freight charges	$0.05	
Rental of mixer, etc.	.35	
Purchases	.45	
Labour	.40	
		1.25
Labour of mixing and placing		1.25
Total cost per cu. yd.		$9.18
Total cost per cu. ft.		.34

Concrete mixed in the proportion of 1:1½:3 will require about one-third of a barrel more cement per cubic yard. This will add about 67 cents to the cost of one yard of concrete in place, making the unit price about $9.85 per cubic yard, or 36½ cents per cubic foot. If a 1:1:2 mix of concrete is used, the cement will be increased about 1-2/10 bbl. over and above that used in a 1:2:4 mix. At $2 per bbl. this would make the cost of 1:1:2 mix concrete about $11.58 per cubic yard, or 43 cents per cubic foot. In large plain concrete footings it is sometimes advisable to use a concrete mixed in the proportion of 1:2½:5. Concrete mixed in this proportion requires about 3/10 of a barrel less cement than 1:3:4 mix. Figuring cement at $2 per bbl., concrete mixed in the proportion of 1:2½:5 works out at approximately 32 cents per cubic foot in place.

"PLANT" THE MOST UNCERTAIN ITEM.

In making estimates for the cost of concrete in place, the most uncertain element entering into this cost is the item of "plant." The cost of "plant and tools" varies greatly with different building superintendents, and depends largely upon the foresight of the persons responsible for the lay-out of the job operations. The number and location of the mixers, towers, and runs used on the job, lay-out and extent of storage space for aggregate, source and expense of power, etc., distance over which concrete machinery has to be transported, good or bad mechanical conditions of rented machinery, rental rates of machinery, replacement of missing shovels and other tools, and many other variable expenses go to make up this cost. The size and shape of the building, as well as the speed of the operations, play an important part in this cost. The "plant" cost for a job containing 6,000 cubic yards of concrete need not necessarily be one-fifth more than a job containing 5,000 cubic yards of concrete. The "plant" will, of course, cost more for the job containing 6,000 cubic yards of concrete, but since the cost of erecting and dismantling the "plant" work for both jobs may be the same, the extra cost of "plant" for the larger job will be principally extra depreciation or rental, fuel, power, wear and tear, and loss of tools. However, "plant" expenses enters into all concrete costs, and must be included in the unit price of concrete if we would get a reasonably accurate idea of the ultimate cost of the work. At the present high cost of all building materials and labour, "plant" costs cannot be safely assumed to be less than $1 per cubic yard, and will very soldom run as high as $2 per cubic yard of concrete. Owing to this wide variation in the cost of "plant," it is necessary in estimating concrete to strike an average cost which, while not accurate, will cover the usual "plant" work, and give a unit cost for concrete in which all items of material and labour have been considered. It is with this in view that a "plant" cost of $1.25 per cubic yard has been used in making up the unit cost of concrete in place as given in the above tabulation.

AMOUNT OF AGGREGATE CONSIDERED EQUAL FOR VARIOUS MIXES.

In calculating the amount of materials necessary to make 1 cubic yard of concrete, it will be noticed that the only change made in the quantities for the various mixes has been in the amount of cement used. It has been assumed that a cubic yard of 1:1:2 concrete will require the same quantity of sand and crushed stone as a cubic yard of 1:2:4 concrete. Theoretically this is not true, but in general practice there is some waste of material, and it has been found that the small differences of aggregate used in the various mixes of concrete in a building are negligible. A very large part of the concrete in a building is a 1:2:4 concrete; therefore, the aggregate quantities of 1:2:4 mix are generally used for all concrete work, and the cement alone is changed for various mixes. It will also be noted that the quantity of cement, sand, and stone used here is somewhat in excess of the amount usually given in the tables published in various text-books. It must be borne in mind that the waste of materials on the job must be absorbed, and the quantities in tables compiled by laboratory tests must be somewhat increased. It is actually necessary to estimate on about 1 2-3 bbl. of cement to make 1 cubic yard of 1:2:4 concrete on a job where the usual construction methods are employed, and in other mixes of concrete the cement should be proportionately increased.

The prices of concrete work as tabulated here are about 30 per cent. in excess of pre-war prices and 50 per cent. more than the prices of 1913. These costs based on the present high cost of material and labour should be adjusted from time to time as necessary.

The cost of steel reinforcement is extremely erratic in its fluctuation, but at present it may be assumed at $90 per ton exclusive of the labour of bending and placing. It will cost from $6 to $15 per ton to cut, bend, and place this reinforcement, $100 per ton, or 5 cents per lb., being a unit price which may be used to give reasonably close cost ratios. Reinforcement requiring much bending and made up of small bars should be figured about ½ cent. per lb. higher than steel requiring only a small amount of bending. Spiral reinforcement for columns should be figured at an extra cost of about ½ cent. per lb. over and above plain bars. In estimating the weight of spiral reinforcement it should be remembered that about 7 per cent. should be added to the weight of the spirals for welding laps.

FORM COSTS.

Forms for round columns are usually made from sheet metal, and in flat slab construction it usually works out cheaper to use round interior columns formed with this material. However, the cost of forming an interior column 26 ins. in diameter for flat slab construction is about the same as forming a column 20 ins. in diameter designed for the same purpose. This being the case, it is not necessary to consider the difference in the cost of forms due to different diameters of round interior columns. It may be well to remember that it costs somewhat less to build an interior column having a head by using a steel form than it does to form the column of wood, as the cost of forming the head in wood is no small part of the column cost. The list of unit prices given here covers the cost of labour and material for form work for the principal operations in a concrete building, but are tabulated for use in making comparative estimates only. It must be borne in mind that these unit prices are for the use of the engineer in weeding out the more expensive designs, and are not to be used for making actual estimates of buildings without regard to conditions and what not. While these costs might be more or less useful in arriving at the total cost of a concrete building it should be remembered that they are only approximate units to be used for the purpose outlined herein.

Type of Construction.	Sq. Ft. Cost. (Surface Measurement.)
Forms for flat slabs, including drop panels	$0.09
Slab, beam, and girder construction, slabs to span not less than 9 ft.	.12
Slab, beam, and girder construction, slabs to span not less than 7 ft.	.13
Slab, beam, and girder construction, slabs to span not less than 5 ft.	.14
Column forms	.15
Floor beams and girders, not including slabs	.16
Wall beams	.14
Partitions and wall forms	.15
Footing and foundation forms	.15
Round steel column forms, including heads, each	15.00

Now that the methods of arriving at the comparative costs of the various types of concrete construction have been outlined, it is believed the designer will be able to work more intelligently regarding the cost his work involves. Typical dimensioned sketch cross-sections of the building from the roof slab to the footings should be made, and the work of estimating done from these sketches. In this way the extra column lengths required to obtain the same clear story heights will enter into the estimate. This is quite a factor in comparing flat slab with beam and girder designs. Estimates made from these cross-sections for a length of building equal to one bay only is the usual practice. In this way the cost per lineal foot of building as well as the cost per square foot of floor space may be calculated. Comparisons of costs made in this manner are genuine proofs to the designer that he is giving the design proper study for economy, and will result in a conservation of building materials, save good dollars for the owner, and establish for the engineer the reputation of being a designer of economical concrete buildings.

LEGAL INTELLIGENCE.

Is a Lodging-House a Dwelling-House?—An important question under the Rent Act, which, it was stated, might be taken to the Appeal Court, came before Judge Smith at West Bromwich County Court last Friday, when Samuel Isaac King, of Paradise Street, West Bromwich, applied for leave to distress for £9 arrears of rent alleged to be due from Phœbe Yorke, in respect of the tenancy of 400, High Street, West Bromwich. Mr. C. H. Darby, for the plaintiff, said that the real question was what the rent of the house should be. Defendant was tenant of the house at 20s. per week, which she paid until recently, when defendant raised the point that the pre-war rent was only 10s., and she refused to pay more. He contended that the property was let as a tenement house, and it did not come under the Rent Act as a dwelling-house. Mr. Lyon Clark, who appeared for the defendant, argued that as the whole of the property was used as a dwelling-house, it came within the Act because the rateable value was only £14 10s. The judge held that as the defendant occupied the house as a lodging-house keeper, it was not a dwelling-house within the meaning of the Act, and gave judgment for plaintiff with leave to appeal.

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Correspondence.

AIR RAID CASUALTIES.

To the Editor of THE BUILDING NEWS.

Sir,—The Committee of War Damage are about to present to the Government returns of casualties which have resulted from the Enemy Raids by Aircraft and Bombardment. The returns are from areas having a population of more than 1¼ millions.

We shall be obliged if you will publish this letter so that Town Clerks and Clerks of Urban and Rural Areas which have been attacked and from which returns have not been received may know that the returns should be sent to our Honorary Secretary, Mr. W. H. Southon, 40, Chancery Lane, London, W.C.2.

The particulars included in the returns are:—1, date of each attack; 2, number killed; 3, number wounded; 4, estimated cost of making good damage to property. Information is also desired of cases where there were attacks and no material damage done.—I am, yours faithfully,

MARK H. JUDGE, Chairman.

7, Pall Mall, S.W.1.,
October 8, 1918.

Our Office Table.

A second edition of "Reinforced Concrete," by Frederick Rings, M.I.A., is issued, at 10s. 6d., by B. T. Batsford, Ltd. Since the first edition appeared the London County Council's regulations have been framed and will doubtless be generally adopted. Mr. Rings has therefore based his formulæ and calculations on the L.C.C. stresses, and brought the subject-matter generally into line with the regulations as a whole. The chapter on bending moments under various loadings has been considerably enlarged and detailed. Reinforced concrete arches, bridges, retaining walls, pipes, domes, and other applications of the material have been added to the book or greatly enlarged upon as compared with the former edition. The small ready reckoner attached to the first edition has been much appreciated, and this has encouraged the author to greatly amplify the reckoner, to re-frame it on the allowable stresses laid down in the L.C.C. regulations, and also to add a further reckoner for the design and checking of Tee beams.

The Government has decided to issue a supplementary schedule, in which men employed in the building trades on approved work for Government Departments will be included by the grant of protection certificates according to certain age limits. The protection for all woodworkers, whether on building work or munitions, will be equalised by the fixing of a "flat" age limit of protection of 29 for Grade 1 men and 24 for Grade 2. A committee has been formed by the Ministry of National Service for the purpose of certifying what building and constructional work comes within the scope of the new schedule. The schedule has been discussed by the Ministries of National Service, Munitions, and Labour, with the trade unions concerned. It should be noted that, apart from the men referred to above, the February schedule remains unaltered.

At the last meeting of the Chepstow Council strong criticism was passed upon certain cottages which the Government are building at Bulwark Garden City. One member said the matter was an absolute scandal, for there were fifty being built to the acre, whereas the Local Government Board rule was for eight. He referred to the houses as pig-styes and dog kennels. Another speaker said that the measurement of one house, which included two rooms, partitions, etc., was only 16 ft. by 21 ft., and the houses were not temporary structures, but were substantial concrete erections that would last for generations. Further criticism of a similar character took place, and the council decided to call for plans.

In many households the head of the family is now serving with the colours or is away on war work, and the matter of fire precautions in the household is all too often neglected or left in less experienced hands. Accordingly, the British Fire Prevention Committee has summarised the principal safeguards against fire in the form of a small poster (No. 32), and has arranged for its gratuitous issue to any applicant who applies to the offices of the Committee, 8, Waterloo Place, Pall Mall, London, S.W.1, in writing (enclosing an addressed and stamped envelope). The issue is well timed at the season when the heating and lighting arrangements are being overhauled in many establishments with the view of economising fuel and illuminants for the coming winter, and several of the safeguards advocated in respect to fires and lights can be readily accorded attention at the same time.

The council of the Institution of Municipal and County Engineers have under consideration what alterations in the laws affecting public highways are desirable in the following matters: In the powers and conditions under which highways may be interfered with by statutory companies and others for the purpose of laying mains, cables, drains, etc., and in regard to subsequent reinstatement. In respect of the rights and powers of the "adjoining owner" in public highways. In respect of the compulsory acquirement of land for the purposes of new highways and for widening and improving existing highways. In respect of the powers to lay down or define a building line on public highways. As many towns in the country have special Acts or by-laws affecting such matters, which might be of use to the council in their deliberations, members in those districts possessing such special Acts or by-laws are requested to forward copies as soon as possible to Mr. A. Dryland, County Hall, Kingston-on-Thames.

LIST OF TENDERS OPEN.

BUILDINGS.

Nov. 13.—Erection of buildings and reinforced concrete coal bunkers.—For the Corporation of Bedford.—Drawings and specifications from the Engineer, Electricity Works, Cauldwell Road, Bedford, on deposit of £1; additional copies of the specification 5s. each. Tenders, marked "Buildings," to the Chairman of the Electricity Committee, Electricity Works, Cauldwell Road, Bedford.

ENGINEERING.

Oct. 19.—Sinking, at per foot, steining and completing a new 5 ft. well, about 50 ft. deep, at cottages at Netherfield Hill, Battle.—For the Battle Urban District Council.—F. C. Shepherd, Clerk, Battle.

Nov. 13.—Supply and erection of two water-tube boilers, mechanical stokers and induced draught plant.—For the Bedford Corporation Electricity Department.—Chairman of Electricity Committee, Electricity Works, Cauldwell Road, Bedford. Chas. Stimson, Town Clerk.

SANITARY.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

STORES.

Oct. 14.—Supply of limestone; paving, kerb and channel; cement and lime; drain pipes; cast-iron goods; ironmongery; smithwork; brushes; oils and paints; oilskin suits; shoeing; and harness repairs.—For the Gellygaer Urban District Council.—F. T. James, Clerk, Council Offices, Hengoed, Glam.

Oct. 15.—Supply of the following (for six months), to March 31, 1919):—Section A, ballast, sand and grit; (B) Portland cement (British preferred); (F) timber.—For the Portsmouth Tramways Committee.—The Town Clerk, Town Hall, Portsmouth.

Telephone: DALSTON 1888

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

CAMBRIDGE.—For outside painting at the infectious diseases hospital, for the town council:—
Bennett and Blowers £88 10 0
(Recommended for acceptance.)

CHISLEHURST.—For outside repairs, painting, etc., at the council offices and the adjoining stables and premises, for the Chislehurst Urban District Council:—
Evitt (recommended for acceptance) £76 15 0

COULSDON (SURREY).—For sewer extension at Coulsdon, for the Coulsdon and Purley Urban District Council. A. Clark, Council Offices, Purley, Acting Surveyor:—
Lane, S., Cecil Road, Wimbledon £1,676 0 0
Iles, E. and E., North Road, Wimbledon 1,529 12 6
Yewen, E. B., St. James Road, Croydon 1,339 0 0
Turner, T., Blackwater, Hants .. 1,297 16 0
Hemmings, H., 9, Nutfield Road, Thornton Heath, Surrey (accepted) 1,000 0 0
Surveyor's estimate, £1,142 18s. 8d.

COVENTRY.—For alterations to "Harefield," for the education committee:—
Jones, W. H., Foleshill £463 0 0
(Accepted.)

EAST HAM.—For supply of a spare section for boiler at the swimming baths, for the East Ham Town Council:—
Cannon and Sons £16 13 0
(Recommended for acceptance.)

GLOUCESTER.—For extension of the tuberculosis hospital at Over, for the Gloucester City Council:—
Fairby Construction Co., Ltd. ..£3,562 0 0
Nicholls, W. T. 1,800 0 0
Halls, W. J. B. 1,711 0 0
Collins and Godfrey.. .. .. 1,697 0 0

The death is announced of Mr. Percy Wilson, building inspector under the Newcastle-on-Tyne Corporation.

Mr. Sheriff Banister Fletcher, C.C., has commenced a series of lectures on "Mediæval Architecture" at the L.C.C. Central School of Arts and Crafts, Southampton Row.

The Edinburgh Dean of Guild Court have granted a warrant for the conversion of the Tabernacle, Leith Walk, into a hostel for sailors. The cost is estimated at over £3,000.

As a war memorial, it is proposed to enlarge and carry out restoration work at the Longley Road Schools, Croydon, in connection with Christ Church, at an expenditure of between £2,000 and £3,000.

All Saints' Church Council, Peterborough, and the parishioners have decided to provide a memorial to the late Canon Ball, as founder, donor and first vicar of the church. It will take the form, if possible, of a stained glass east window.

Many readers will regret to learn of the death of Mr. Edmund Coates, which occurred at his residence, 125, Rooley Moor Road, Rochdale, on Wednesday last. He was seventy four years of age. When a youth he came to Rochdale from Wensleydale and commenced working for W. A. Peters and Sons, joiners and builders, Crossfield Mills, Townhead. Later he was appointed foreman joiner, and retained that position until he retired fourteen years ago. During his connection with the building trade Mr Coates was the secretary of the Rochdale branch of the Amalgamated Union of Carpenters and Joiners. He was a brother of the late Councillor Jarvis Coates and Mr. John Coates, joiners and builders. The deceased has left four daughters and one son, Mr. John Coates. The funeral took place at the Rochdale Cemetery on Monday last.

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October 16, 1918. Volume CXV.—No.3328.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

London County, Westminster, and Parr's Bank, St. Mary Axe Branch, London, E.C. Mr. Frederick Hall-Jones, Architect.

Housing for Munition Workers and other Buildings at Gretna and Eastriggs, near Carlisle, carried out by a group of architects under the direction of Mr. Raymond Unwin, F.R.I.B.A. The Public Hall at Eastriggs, House for the Chief Engineer, and also plans, elevations, and section of the Government housing scheme. Type VIII. G. dwellings.

Currente Calamo.

The London County Council on July 15, 1918, agreed that at the conference to be held with the metropolitan borough councils and local authorities in districts contiguous to London on the subject of housing after the war, the question of town planning should be discussed so far as it is ancillary to housing after the war. In view of this decision it was thought desirable that the Council should have before it a report by the officers dealing with various aspects of town planning under the Housing, Town Planning, etc., Act, 1909, and accordingly instructed the chief engineer, the architect and the valuer to report upon town planning in Greater London upon the following lines, and taking into account the town planning chapters in the report of the recent Royal Commission on Housing in Scotland:—(1) Statement showing the position in regard to town planning schemes in the areas of the local authorities of Greater London. (2) The relation of the town planning schemes to the schemes of arterial roads as approved by the conferences 1914-16. (3) The question of co-operation in the preparation of town planning schemes between neighbouring local authorities in Greater London, showing the existing practice and whether any modification would be advisable. (4) The possibility of the simplification of town planning schemes in general, in view of war conditions, and the benefits that might accrue from any such simplification. (5) The effect of the so-called sterilisation sections of the Housing, Town Planning, etc., Act, 1909, upon the development of Greater London, together with suggestions for meeting the difficulty. The officers mentioned have now submitted to the Building Acts Committee a joint report upon the subject, and it is recommended that the joint report by the chief engineer, the architect and the valuer upon the subject of town planning in Greater London be published. The report will, we are sure, be a valuable and interesting one. The Council has, in the past, thanks to the successive Building Committees and the three officers named, done so well in regard to housing and town planning that its recommendations are certain to be based on a successful experience unequalled by any similar authority. A similar report has been prepared by the Housing Committee, which will doubtless be of equal interest and importance.

Mr. Hayes Fisher, President of the Local Government Board, has lapsed into pessimism once more! Addressing the members of the Birmingham City Council on the 8th inst., he said that there was a deficiency of at least 300,000 houses in the country. While they were aiming at building 300,000 within twelve months after the war was over, they were anything but sure that they would be able to do it. Three hundred thousand houses would require 350,000 men to build them if they were to be built in a year, quite apart from the men who were to clear the sites and do many other necessary things. They doubted if they would be able to build the 300,000, even although they got all the help they could from local authorities, public utility societies and private builders. It was not only workmen's dwellings that would be required after the war. Numerous other buildings were required, and there would be an immense amount of repair work to be done. "Look at the devastation in the North of France! Look at Belgium! God only knew what the Germans may do before they leave both countries. All that has got to be reconstructed." There would be a great demand for building and repair work in France and Belgium, as in this country, and we should have to share with them the material that would be available. He only hoped he would be alive to see 300,000 houses built in this country at the end of the first year after the war. Who was going to build them? He should be very sorry to be the head of the department in London which was responsible for the erection of 300,000 houses between Newcastle and Truro. The private builder could not build the houses. The greatest hope was in a combination of local authorities with public utility societies or groups of builders, and the Government had generously offered to assist them in finding the money.

At last week's meeting of the Nottingham City Council, Messrs. W. Crane and R. H. Swain failed, by a narrow margin, to secure the consent of the Council to a resolution urging the extension of the Guildhall buildings by the utilisation of the site adjoining them for the accommodation of all the municipal departments. Mr. Crane showed that it would take at least two years to prepare the plans. It was essential that additional accommodation should be provided, and, by using the ample site suggested, they could find accommodation for all the municipal offices in one building, and avoid the confusion, difficulties, and delay which ensued from the present arrangements. The scheme would also set free the site of the Exchange Hall, which could be developed on commercial lines. It was the finest building site in the United Kingdom, and he claimed that the ground rent and rates which would accrue from its development would be of financial benefit to the Corporation. He calculated that the ground rent for the Exchange site, with an extension to provide a direct crossing from King Street to Exchange Walk, would bring in £13,062 per annum, that the ground rent of the Albert Street site which was occupied by the City Treasurer's office would yield £1,005, and that the rates produced by the new buildings on the Exchange site and its extension, and on the Albert Street site, would amount to £9,398. He also estimated the rent of the gas offices in George Street at £350, and the saving of rents now paid by the Education and Tramways Committees at £650, a total of £24,465. This figure, less £19,515 annual charge for repayment of loans for the new buildings on the Guildhall site (£300,000, at 5 per cent.) would leave a clear annual balance of £4,950. Nothing was advanced by the opposition in disproof of Mr. Crane's statements. Fifteen voted for the resolution and twenty against, and on the names being recorded it was defeated by twenty-one to seventeen.

The October *News-Sheet* of the Bribery and Secret Commissions Prevention League, which is issued from the office, 2, Queen Street Place, London, E.C.4, gives quite a sheaf of recent convictions of bribers, a fair sprinkling of whom, we regret to say, are connected with our own industry. One thing we fail to understand, and that is the lenient view taken by some of the magistrates. In one case at Saxmundham, on August 22, Edward Suggle Moyle, of Penryn, Cornwall,

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pleaded guilty to agreeing corruptly to give £5 to Captain J. A. W. MacMullen. It was stated that the accused was a thoroughly respectable man, by trade a carpenter, but now occupied as a storeman at Gweek, and his only son had to join the army. He wrote to the Commanding Officer of the battalion, saying that if his son could be transferred from the infantry to his own trade he would give the officer £5, not as payment, but as a gift of "gratefulness." This letter was followed by other letters, in which the promise was repeated. Moyle stated that whatever was done by him was done "from a pure motive"; he did not think he was doing any harm. He was anxious for his boy, who had been very sick. The Chairman said that the Bench had taken a light view of the case, in view of the man's good character, and that he had acted on account of affection for his son. A fine of £10 was imposed, together with £7 18s. 2d. costs. In another, it was sought by an appeal to the Scottish Justiciary Appeal Court to upset the conviction of Giuseppe Zani, Glasgow, a partner of the firm of G. Zani and Co., mosaic workers, 87, Bath Street, Glasgow, whom Sheriff-Substitute Blair had fined £25, with the alternative of three months' imprisonment, on a charge that he sent a £5 note to the clerk of works employed in connection with additions being made to premises at Laighpark, Paisley, for the purpose of corruptly inducing him to favour the appellant or his firm in relation to a particular contract. Counsel for the appellant submitted that the fatal blot on the conviction was that to the end of the day Zani did not know what he was supposed corruptly to have done. The Lord Justice-Clerk: "You did not succeed because the clerk of works, being an honest man, handed the £5 note to his employer." The Court dismissed the appeal, holding that the complaint was relevant, and that the conviction must stand. At Hunstanton, on September 10, Henry Weaver, foreman carpenter, was committed for trial, charged under the Prevention of Corruption Act with having accepted 10s. from Albert Johnson and five other men. It was stated that the prisoner engaged the carpenters for a contractor carrying out work at a Government building. Two men stated that Weaver obliged them to give him 10s. weekly out of their wages, and two men stated that they gave him 1d. out of the 1s. 1d. per hour which they were paid, the foreman asking for this sum. All the workmen had made signed statements, and had afterwards, it was alleged under pressure from Weaver, made further statements that what they had previously told the resident engineer was false.

"I hear rather disturbing accounts," says the "Man About Town," in the *Evening News* of the 9th inst., "of the Admiralty housing scheme for its workers at a certain shipyard which is better left unnamed. I am assured that certain concrete houses were built without any provision being made for window panes, and the chases for these were afterwards cut out by hand with hammer and chisel—a long and costly process. This, however, is not by any means the most important part of the story. If my information is correct, far too many houses are being built to the acre, which means the creation of something approaching to a State-erected slum. It would be well if some of our leading architects were called into consultation in order to save what appears to be a waste, and worse than a waste, of public money." "It would have *been* well," our contemporary should have written. But the "God Almighty-to-a-black beetle" attitude to the representative bodies of architects and builders at the beginning of the war, which hindered all co-operation, still prevails more or less *sub-rosa*, and we shall have a good deal to say by and by about worse instances of ineptitude and scandalous waste when our mouths are unstopped!

THE COST PLUS METHOD OF CONTRACTING.

A good deal has been said this side about the demerits of the cost plus method of contracting, which, however, seems to be finding increased favour in the United States. Possibly it may not suit English methods, but it may be as well for those of us concerned, who are not unlikely presently to be competitors in France, Belgium, and the nearer East with our American brethren, to note that censures of the system, even by responsible trade associations, do not seem to be endorsed by the majorities of members of such. For instance, the Convention of Building Industries which met recently at Atlantic City attempted to pass a resolution in favour of "Voiding so far as practicable so-called cost plus contracts," inasmuch as various departments of the Government looked with disfavour upon cost plus contracts. Mr. P. B. Glassco, president, George W. Stiles Construction Co., discussing this question in *Engineering and Contracting*, says:—It seems strange that a body of men who should be well informed in regard to building matters under present conditions should attempt to pass such a resolution, and the fact that after discussion it was not passed goes to show that there are a great many things to be said in favour of cost plus work.

The greatest advantage claimed for the cost plus system is that on urgent work it permits work to be started without waiting for the plans to be completed, thus effecting a great saving in time, and also probably in cost, as an efficient contractor, working with an architect or engineer, can no doubt make suggestions that will save money as well.

If the work is not so urgent and will permit the finishing of the plans and taking bids, the proper kind of cost plus contract might still save an owner money under present conditions, for in bidding on lump sum contracts reliable and experienced contractors will undoubtedly add a larger percentage of profit than they would under ordinary conditions, and in addition put on considerably for contingencies in the way of advances in wages, prices of materials, freight rates, and other risks. If these contingencies do not arise, the owner still has to pay for them, and the contractor makes a larger profit than he is really entitled to. In actual practice it has often worked out that all bids are considered to be excessive, and the project is either abandoned or shelved for the time being, or else new bids are taken in the hopes of finding a contractor who is willing to take large risks for a slight prospective profit.

There have been abuses in connection with cost plus work, possibly more on public work than on private, but instead of condemning the cost plus system outright it might be better to attempt to develop a cost plus system which would eliminate abuses as far as possible, and the best way of eliminating abuses is to give the contractor every possible incentive to make good. Can this be accomplished by a system which puts the contractor on his mettle to achieve and maintain a reputation as an economical and efficient builder, and which also makes his pecuniary reward dependent upon his degree of success in carrying out his contract?

Where speed is essential and where it is desirable to start the work before plans are finished, the architect or engineer will naturally pick from the contractors known to him the one best suited for the particular job, and abuses can only be avoided by securing a contractor of unquestioned honesty and ability. Where there is time, however, to prepare complete plans and specifications, some of the good points of lump sum competitive bidding might be combined with a cost plus system, which embodies the incentives of "making good" referred to before, and the owner secured the benefit of both systems. An outline of such a combination which we have suggested to several architects and engineers recently, and which has been used by them in taking bids, is as follows:—

The architects or engineers invite four or five honest and competent contractors to submit competitive bids on the amount of the lump sum fee for which they will do the work on a cost plus basis. Each contractor submits with his bid on the fee a detailed estimate of the actual cost of the work, and is required to guarantee his estimate to the amount of one-half of his fee; that is, if the actual cost should exceed the estimated cost, the overrun is to be deducted from the contractor's fee up to one-half the amount of the fee. This gives the contractor every incentive to keep the cost as low as possible in order that he shall earn his full fee, but is not so strong as to cause him to risk his reputation by slighting the work, as he is certain of at least one-half his fee. An added incentive for economy and efficiency is to give the contractor a percentage (usually 50 per cent.) of any savings in cost under the estimated cost.

Several tryouts of this system, where the contractors were given their option of submitting either lump sum bids or cost plus bids, showed that the contractors system, and in one case at least no bids were strongly in favour of the cost plus were received on the lump sum basis, all the contractors electing to submit bids on the cost plus basis. In instances where lump sum bids were submitted the cost plus bids were found to be considerably lower.

An outline for invitation for either lump sum or cost plus bids which, of course, will have to be amplified or varied to suit any particular job, is as follows:

The owner will consider bids submitted on the usual lump sum basis, also bids on a "cost plus" basis. Contractors may bid under either or both methods as outlined below:

1. Lump sum bid to be made for all branches of the work as listed below, except that the mechanical branches may be omitted if desired. Bid shall state specifically all branches included: Wrecking, excavating, masonry, etc.

2. Cost plus bid shall state a lump sum fee for which the contractor will do the

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work on a cost basis, cost to consist of all expense in connection with the work except overhead expense of contractor's main office. The contractor shall also submit with bid his estimated cost of the work except the mechanical branches, but the superintendence and handling of these branches shall be covered by his lump sum fee. Any overrun of the cost above contractor's estimate shall be borne by the contractor up to one half the amount of his fee, any balance by the owner. Any saving shall be divided equally.

Estimated cost shall be given in detail by branches as outlined below. For various items included under each branch refer to the general specifications.

Overhead expense shall include liability insurance, fire insurance, permits, temporary offices, sheds, fences, toilets, etc.; phone, heat, light, etc.; travelling expenses, superintendent, foremen, timekeeper, water boy, watchman, etc.; plant costs, freight, rentals, repairs, depreciation, tools, etc.; and other items of overhead expense.

The architect will require the contractors whose propositions are favourably considered to submit complete detailed estimates showing quantities, unit with original quotations, wage scales, etc., used in estimating, all to be checked and approved by the architect before contract is awarded.

1. Overhead expense .....$.....
2. Wrecking .....$.....
3. Excavating .....$.....
4. Etc. .....$.....
5. .....$.....

Estimated net cost .....$.....
Lump sum fee .....$.....

Total .....$.....

Any architect or engineer could, of course, work out his own form of contract for this system of cost plus work, making it as simple or elaborate as he pleased.

Last, but not least, on cost plus work done, we are assured that relations with the owner and architect have been most pleasant and agreeable, as all interests are identical, that is, to do good work as economically as possible; and the contractor is sure of a certain, if small, compensation for his skill and ability as the builder; he finds that much of the friction is eliminated which is bound to arise under a lump sum contract, where it is to the contractor's interest to do as little as possible under the plans and specifications, whereas it is the owner's and architect's concern to get as much as possible.

A 15 per cent. increase of salary has been granted to the surveyor (Mr. Edward Astbury) of the Buckley Urban Council.

A hinged reredos was dedicated in the parish church on Monday week by the Bishop of Peterborough. The cost amounts to probably £3,000. The central panel is that of the Sacred Heart. The design is that of Badley and Hare (Mr. Cecil G. Hare), and the carving, including figures of St. John, St. Peter, St. Hugh of Lincoln, Abbot William George, St. Chad, St. Aidan, and others, are all executed in English oak. A Bishop's throne is to be added. The panel paintings are by Mr. F. A. Jackson, of Ealing.

Some evidence was given last Friday as to the Barrow housing difficulty, when a man named Parkinson was fined 40s. and ordered by the Barrow magistrates to abate a nuisance on his premises. He lived in a caravan, and had let a hut to a man who used it for sleeping purposes. This hut was described by the sanitary inspector as "really a rabbit hutch." He added that there were ten people living in caravans in a perfect quagmire, and there were no sanitary arrangements. The medical officer said there were hundreds of caravans occupied in Barrow for which special sanitary arrangements were made.

Our Illustrations.

LONDON COUNTY, WESTMINSTER AND PARR'S BANK—ST. MARY AXE BRANCH.

The building, of which the illustration was in this year's R.A. Exhibition, comprises Nos. 27, 29, and 31, St. Mary Axe, the two latter having been entirely rebuilt and incorporated with the original premises, which were remodelled. The new front extends to the entire building; the ground floor is of grey polished granite. Internally the whole of the bank is furnished in teak, the fittings being by Messrs. Ogilvie and Co., of Mildmay Avenue, Islington, N. The steel construction was executed by Messrs. R. Moreland and Sons. The electric lighting and heating throughout the building were installed to the specification of Messrs. Dolby and Williamson, consulting engineers, of Westminster. The general contract was carried out by Messrs. Holliday and Greenwood, Ltd., of London, to the designs and under the supervision of Mr. Frederick Hall-Jones, architect, of Parliament Mansions, Victoria Street, S.W.

HOUSINGS FOR MUNITION WORKERS AND OTHER BUILDINGS AT GRETNA AND EASTRIGGS.

In our issue of October 2 we commenced a series of working drawings illustrative of these townships and showing the buildings designed by a group of architects and carried out by them under the direction of Mr. Raymond Unwin. A general description of the work, and a site plan of Eastriggs, where the munition workers live, appeared in the same number, together with the drawings of the Institute and shops, as well as one of the types of houses. Today we publish the Hall at Eastriggs, the chief engineer's residence, and another block of houses giving plans, sections, and elevations in each case.

PROFESSIONAL AND TRADE SOCIETIES.

Architectural Craftsmen.—At a meeting of the Architectural Craftsmen's Society held in the Society's Room in the Royal Technical College, Glasgow, on Friday evening, October 11, Mr. David Skinner, President, in the chair, Professor Charles Gourlay delivered an illustrated lecture entitled "Gleanings from the English Cathedrals." The Professor restricted the scope of his lecture to some of the cathedrals he had visited. He compared the design of one cathedral with another, dealing with their situations, external and internal designs, and finally their screens, stalls, wall arcades and monumental tombs.

Lieutenant F. C. Clemesha, the well-known Regina architect, has been listed among the wounded during the recent fighting in France. Lieutenant Clemesha left Regina in May, 1915, with a draft of the 46th Battalion. Prior to enlisting he was senior partner of the firm of Clemesha and Portnal, architects, and designed many important buildings. When competitive plans were called for the Winnipeg city hall, his were awarded the prize.

At the last meeting of the Housing and Town Planning Committee of Edinburgh Town Council, the Town Clerk reported on meetings with the Local Government Board regarding the proposed housing scheme for the Georgie Estate. Plans prepared by the city architect were submitted, and after discussion it was agreed to recommend the Town Council that a flat rate of twenty houses per acre should be fixed. The Committee have decided to ask for authority to proceed with the Granton Town Planning Scheme, and a meeting is to be called of the proprietors interested on Monday, October 28.

Correspondence.

DEADWOOD—ARCHITECTS' LEGAL LIABILITY.

To the Editor of The Building News.

Sir,—Why does the Government hold up Professor Groomes' scheme for scientific work in timber for mines and house building? We are told it is because the timber trade does not give the scheme adequate support? People who sell such inferior wood as deadwood are not likely to further such a scheme—part of their living would be gone. Take a pre-war issue of the *Timber Trades Journal* and notice the descriptions of the import of this diseased timber. You will at once see the alarming proportions in which the timber has been used since 1880 when it was first introduced.

It is not healthy. Such wood is lifeless. No one can argue that deadwood is good wood. Decay must attack it very soon. Dry rot is the most likely disease. Put it into a closely confined space and the terrible consuming fungus soon commences its work.

My house is 300 years old The wall panelling is as good and healthy as when it was fixed, for it is oak. But the *deal* floorings were so honeycombed with worms that spilt water was directly soaked up. I was obliged to relay with new floor boards.

Here is proof, if proof were needed, that the life had gone out of the deal (red-wood) boards; worms had attacked them, they crumbled to dust; the nature had died out of them, and hence they were useless.

When even healthy trees are cut down, in a few hundred years the life gradually dries out of them and then decay sets in. If the trees are lifeless before being felled, they are dead vegetable matter and should be tabooed.

If a Government Department were appointed to scientifically investigate timber under all kinds of atmospheric conditions, it would do very good work, and I am sure there would be an end to the importation of these inferior soft timbers.

The two chief Architects' Associations ought to interest themselves in the matter because of the legal liability to architects. The Royal Institute of British Architects once held a discussion on the matter of an architect being legally held responsible because dry rot had made its appearance in a building even some years after it had been erected, and in this particular case the architect was held responsible.

The endeavour of the Institute was to try and define the duties of an architect, so as to relieve him of the responsibility in such cases, but the law has not been altered on this point, and the architect is, as he has always been, responsible when dry-rot sets in in buildings of which he has had control.

A builder said to me some time ago that a stack of timber he had just got in was the best he had ever had, because not only was it free from knots, but there was not a particle of sap on it. He said it was almost too good to use for joists. It was only my emphatic knowledge of this wood that convinced him that he was using deadwood. Indeed, it is not to be wondered at that many builders and architects are entirely ignorant of this inferior wood. Apart from the question of the reddish hue, there is nothing but the light weight of the wood to distinguish it from good timber.

For these reasons I assert and maintain strongly that an Act of Parliament should be passed prohibiting the use of diseased or dead timber, except when it is cut into thin slabs of only a few feet in length, so that it cannot be used for anything else besides box-making or similar work. No one would then be injured, the exporters and importers of deadwood would then still be able to sell their deadwood, and no disarrangement of commerce would result.

Perhaps some of the eminent architects now so closely in touch with the Government will further Professor Groomes' scheme for the sake of the general public, even if the legal liability of the architect is treated as of little or no consequence. —Yours faithfully,

J. H. Kerner-Greenwood.

King's Lynn.

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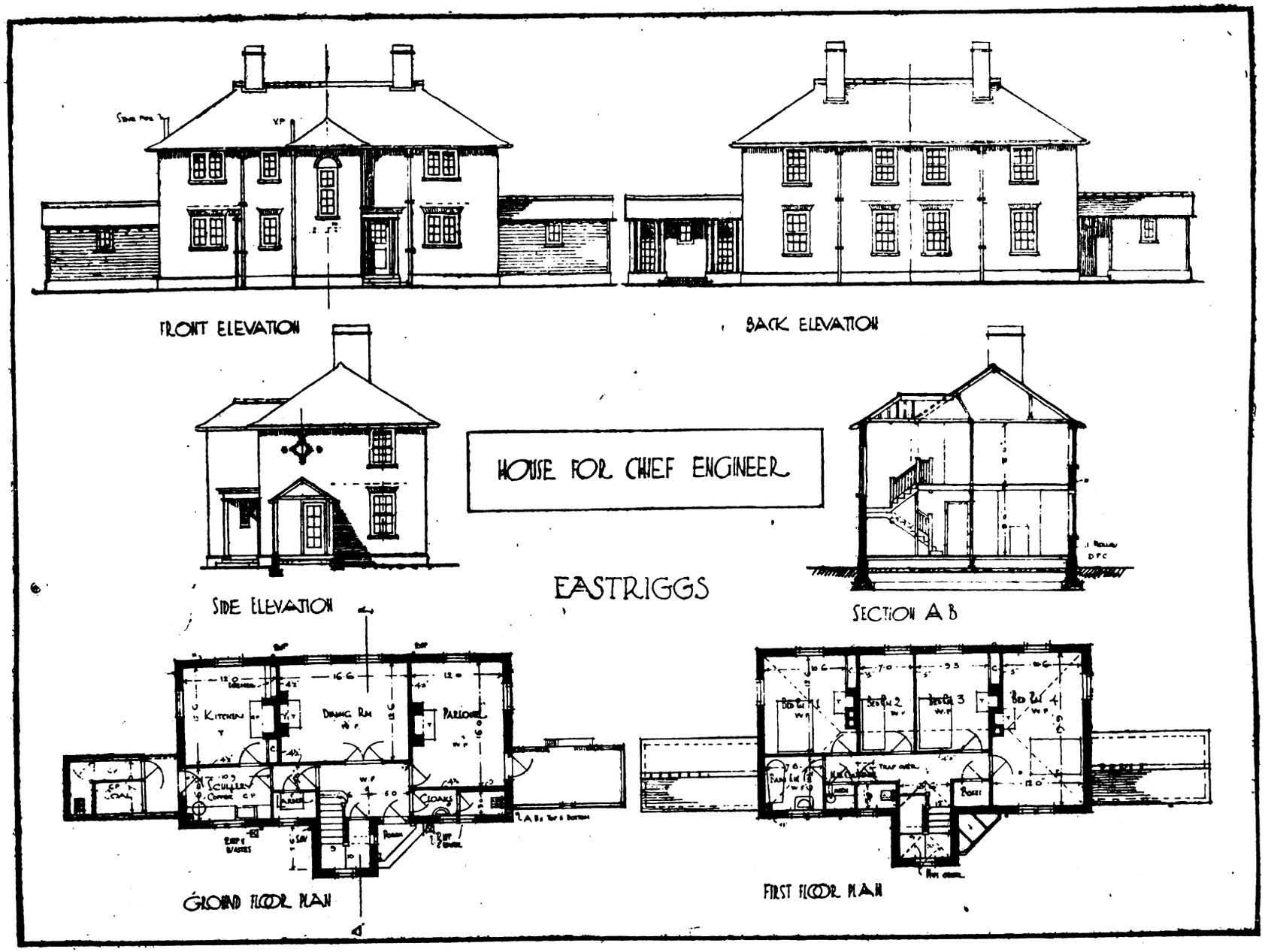

GRETNA HOUSING SCHEME.—HOUSE FOR THE CHIEF ENGINEER.
By a Group of Architects under the Direction of Mr. RAYMOND UNWIN, F.R.I.B.A.

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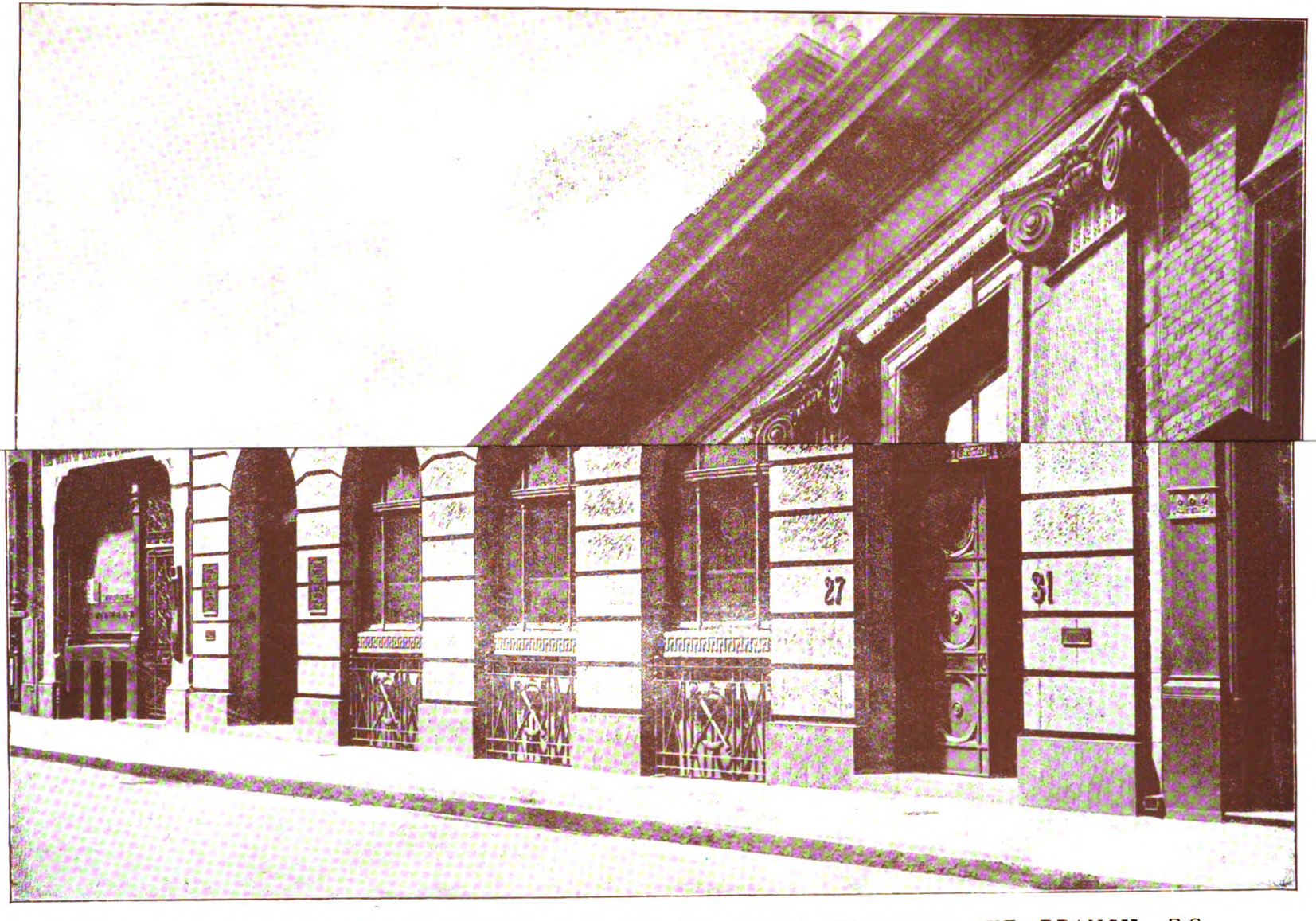

LONDON COUNTY, WESTMINSTER AND PARR'S BANK, ST. MARY AXE BRANCH, E.C.
Mr. FREDERICK HALL-JONES, Architect.

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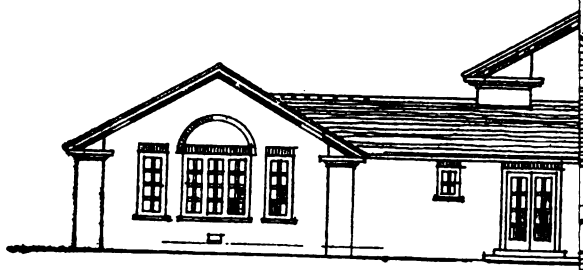
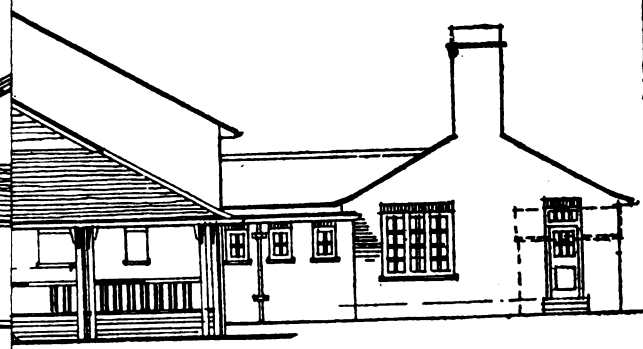


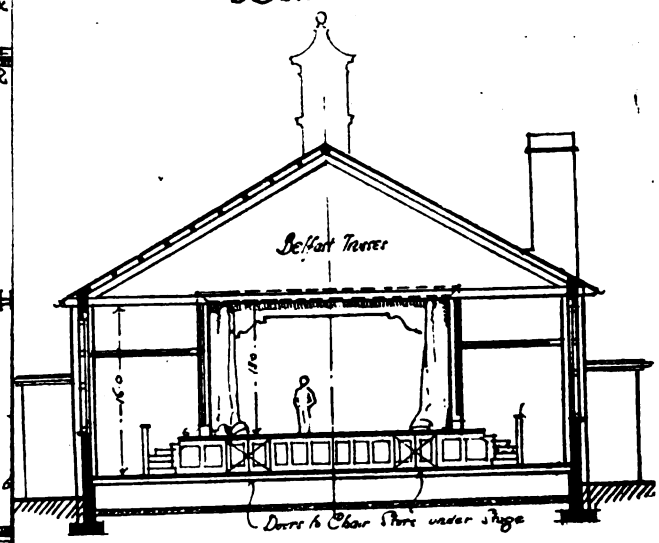
WEST ELEVATION



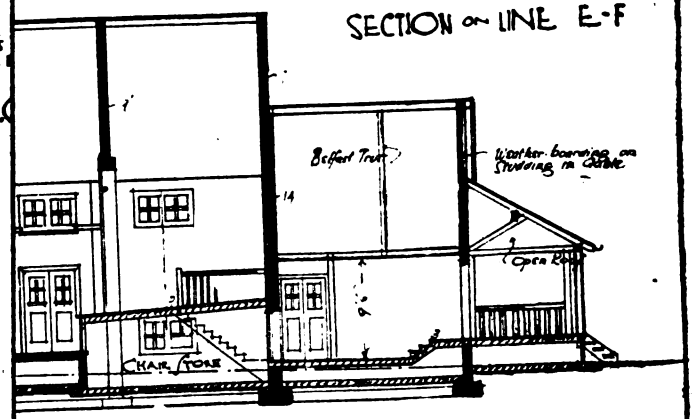
EAST ELEVATION

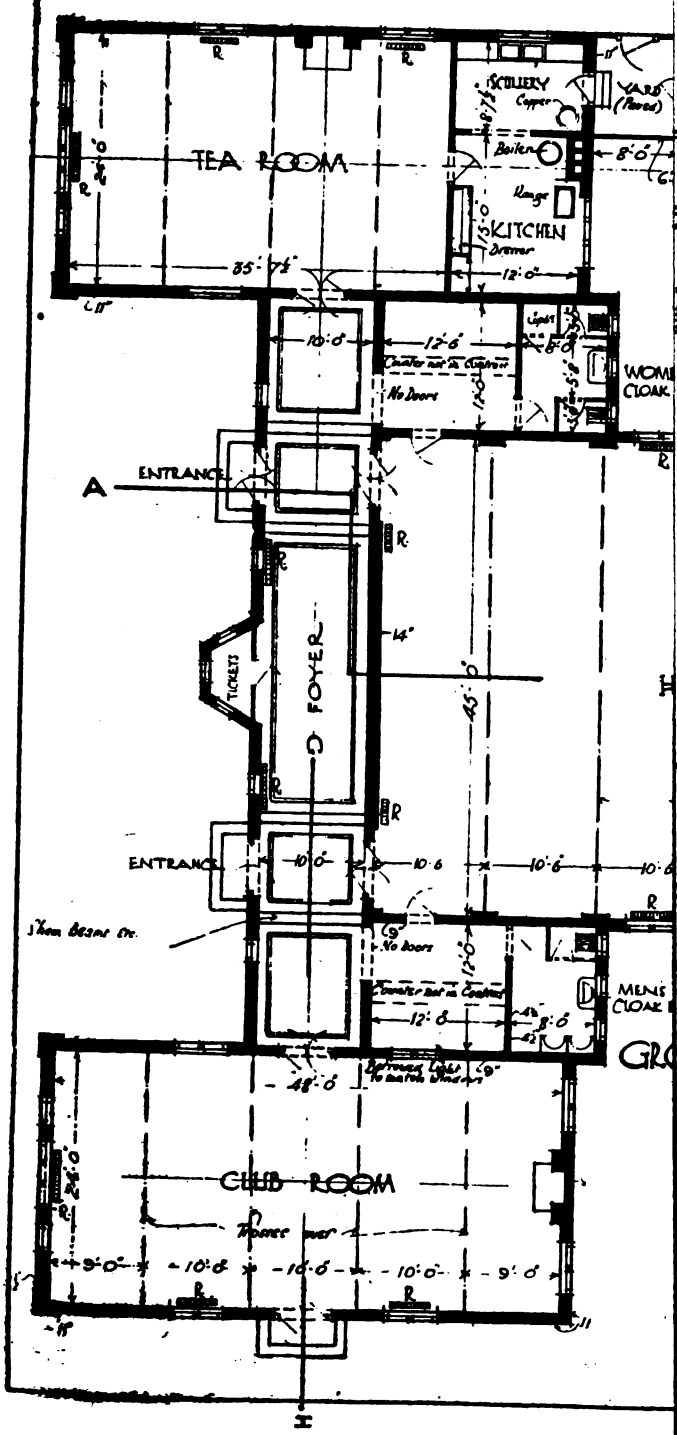
PUBLIC

SOUTH ELEVATION



SECTION on LINE E-F





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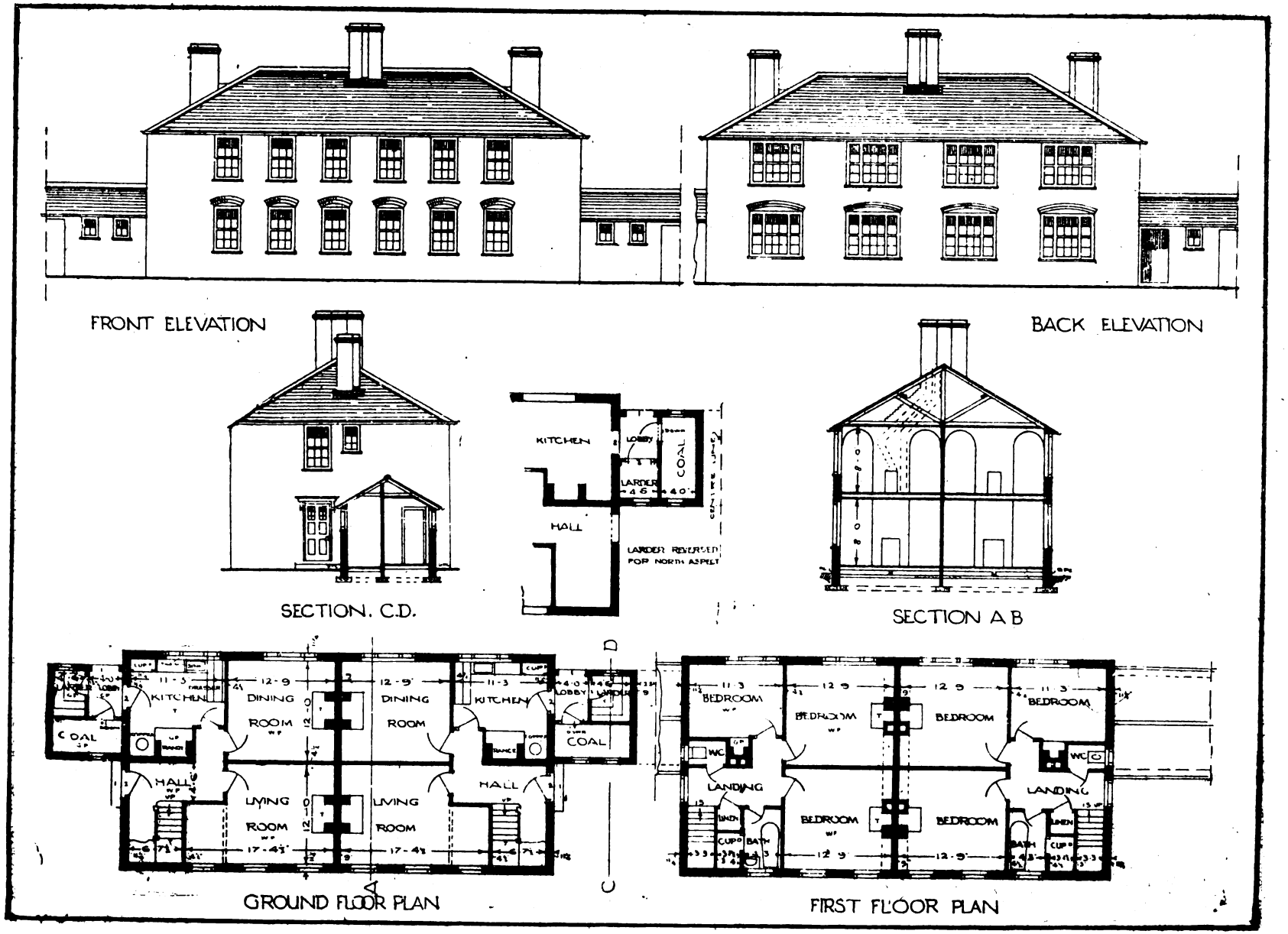

GRETNA HOUSING SCHEME HOUSES : TYPE VIII. G, EASTRIGGS.

By a Group of Architects under the Direction of Mr. RAYMOND UNWIN, F.R.I.B.A.

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ECONOMY IN THE DESIGN OF COLUMNS FOR CONCRETE BUILDINGS.

By Clayton W. Mayers.*

Probably no part of a concrete building is simpler to design than the columns, and because of this simplicity the designer is very likely to give this part of his computations very little special study. It is also true that no part of a concrete building can conceal so effectively the lack of economical design as can the columns.

The economical design of the columns for a concrete building of only one or even two stories in height, is not a matter requiring much special study, but in buildings several stories in height the subject is one of vast importance. It is not possible to design columns showing maximum economy without careful consideration of several important facts. Engineers designing concrete buildings realise that a richer mix of concrete costs more than a leaner mix. They realise that to offset this extra cost of a richer mix of concrete in column design there is a corresponding decrease in reinforcement which results in a change in the total costs of the concrete columns. The manipulation of these mixes of concrete in order to determine the most economical column construction is a subject for real study, and to accomplish this end the engineer will find it necessary to make several trial designs and calculate the cost of each design. For example, a column 26 in. in diameter, composed of concrete mixed in the proportion of 1 : 1½ : 3, reinforced with eleven 1-in. round rods and 1 per cent. spiral hooping, will carry about the same load as a column of the same diameter composed of 1 : 1 . 2 concrete, reinforced with seven ⅞-in. round rods and 1 per cent. spiral hooping. As both of these are good designs, the question arises as to which one would be the most economical. Assuming the unit price of 1 : 1½ : 3 and 1 : 1 : 2 concrete at 36 cents and 43 cents per cubic foot respectively, vertical reinforcement at 5 cents per lb., and spiral hooping at 5½ cents per lb. in place, it can be clearly shown that the column composed of 1 : 1 : 2 concrete will prove to be the more economical one to use. The point at which the column mixes change and where spirally reinforced columns should be used is determined only by making these comparative estimates.

It is not uncommon to see detailed plans calling for a lap in all the rods in a lower story column without regard to the fact that the column above may call for a lesser number of rods for its reinforcement, and it is only necessary to lap part of them. This is real waste and shows careless design which will run into money faster than the designer suspects. For illustration, the first story wall columns of a concrete building are 36 x 24 in., reinforced with twenty 1⅛-in. round rods. The second story wall columns are 36 x 30 in., reinforced with fourteen 1⅛-in. rods. A lap of thirty diameters is called for in all column rods. If the entire twenty rods in a first story column are lapped into the second story column it means that six of these twenty 1⅛-in. rods have been unnecessarily lapped and consequently this extra reinforcement wasted. Had only fourteen of these first story column rods been lapped into the second story column instead of twenty, a saving of about 17 lin. ft. of 1⅛-in. round steel rod would have been made. This reinforcement, figured at 5 cents per lb., would have shown a saving of about $3 at his one point. Multiply this saving by the number of columns in the building where such laps occur and it becomes no small item. The expense of a cost of this kind becomes considerably greater when the column in question is a wall column on which is superimposed a so-called turned up wall beam designed to be poured with the floor slab. In this case the specified lap begins at the top of the wall beam instead of the top of the floor slab and extends upward. For example, suppose a wall beam extending 14 in. above the second floor, designed to be poured with the slab. had been superimposed on the 36 x 36-in. wall column just discussed. In this case the lap must be measured from the point where pouring is stopped. If the twenty 1⅛-in. round rods are all carried up into the second story column for a lap of 30 diameters it means that all the rods must extend to a point 4 ft. above the second floor, when in reality it is necessary to carry only fourteen of these rods to this point, starting the fourteen 1⅛-in. round rods in the second story column at a point 14 in. above the second floor and extending upward. The loss incurred by carrying the entire twenty 1⅛-in. round rods into the second story column is about 24 ft. of 1⅛-in. round rod, which at 5 cents per lb. is about $4, as against the loss of $3 when no wall beam is designed to be poured with the floor slab. Wastes of this nature at the present high price of reinforcement are serious.

In the design of wall columns it will be necessary, usually, to consider the amount of sash and curtain wall required to fill the space between columns, as the smaller the width of the exterior columns the more sash and curtain wall will be required to fill in the space between these columns. This may seem trivial, but it will oftentimes give false impressions of economy if all these seemingly trivial details are not given a place

TABLE I.

Design.		Comparative Estimates.		
Scheme (a)...	36-in. dia. col.	Conc	99 cu. ft. at 34c	$33.66
	11 1⅛-in. rd. vert. rods.	Forms	Round steel	15.00
	⅜-in. rd. bands 12 in o/c	Reinfct	716 lb. at 5c	35.80
	Mix 1 : 2 : 4	Lost fl. space	5sq. ft. at $2.75	13.75
		Total		$98.21
Scheme (b)..	32-in. dia. col.	Conc	79 cu. ft. at 34c	$26.86
	23 1⅛-in rd. vert. rods	Forms	Round steel	15.00
	⅜-in. rd. bands 12 in o/c	Reinfct	1,437 lb. at 5c	71.83
	Mix 1 : 2 : 4	Lost fl. space	3 1-10 sq. ft. at $2.75	8.54
		Total		$122.25
Scheme (c)...	32-in. dia. col.	Conc	79 cu. ft. at 36½c	28.84
	12 1⅛-in. rd. vert. rods	Forms	Round steel	15.00
	⅜-in. rd. bands 12 in o/c.	Reinfct	770 lb. at 5c	38.50
	Mix 1 : 1 : 1 2-3	Lost fl. space	3 1-10 sq. ft. at $2.75	8.53
		Total		$90.87
Scheme (d)...	26-in. dia. col.	Conc	52 cu. ft. at 36½c	$18.98
	11 1-in. rd. vert. rods	Forms	Round steel	15.00
	1 per cent spirals (18½lb) per lin ft.	Reinfct (vert.)	514 lb. at 5c	25.70
		Spirals	264 lb. at 5½c	14.52
	Mix 1 : 1½ ; 3	Lost fl. space	7-10 sq. ft. at $2.75	1.92
		Total		$76.12
Scheme (e)...	28-in. dia. col.	Conc	60½ cu. ft. at 43c	$26.02
	20 1⅛-in. rd. vert. rods	Forms	Round steel	15.00
	⅜-in. rd. bands 12 in. o/c.	Reinfct	1,255 lb. at 5c	62.75
	Mix 1 : 1 : 2	Lost fl. space	1.45 sq. ft, at $2.75	3.99
		Total		$107.76
Scheme (f)...	26-in. dia. col.	Conc	52 cu. ft, at 43c	$22.36
	7⅛-in. rd. vert. rods	Forms	Round steel	15.00
	1 per cent spirals (18½lb.) per lin. ft.	Reinfct	245 lb. at 5c	12.25
		Spirals	264 lb. at 5½c	14.52
	Mix 1 : 1 : 2	Lost fl. space	7-10 sq. ft. at $2.75	1.92
		Total		$66.05
Scheme (g)...	24-in. dia. col.	Conc	44⅓ cu. ft. at 43c	$19.14
	10 1⅛-in. rd. vert. rods	Forms	Round steel	15.00
	1 per cent. spirals (16lb.) per lin. ft.	Reinfct (vert.)	606 lb. at 5c	30.30
		Spirals	229 lb. at 5½c	12.60
	Mix 1 : 1 : 2			
		Total		$77.04

* Of the Aberthaw Construction Co., read before the American Concrete Institution.

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in the estimated comparative costs of the various designs.

Several comparative designs for any interior column were shown by the author. The comparative costs of the various schemes are worked out in detail, using unit prices principally from tabulations in Part 1 of this paper. (See p. 250 of our issue of October 9.)

From the above estimated comparative costs, perhaps the most noticeable fact is that the columns using the 1 : 2 : 4 mix of concrete are among the most expensive. Using this lean mix necessarily produces a column larger in diameter, which means also a loss of valuable floor space. It will also be noticed that the smallest column designed is not the most economical. The column which shows the most economy in this case is one having a 1 : 1 : 2 mix and about 1 per cent. of vertical reinforcement, together with 1 per cent. of spiral reinforcement. Hence a rich mix of concrete and comparatively small percentages of steel reinforcement seem to show the most economical results for a column carrying a fairly heavy load.

For comparative purposes, the difference in the amount of concrete in the column heads may be neglected as the top diameter of the head usually remains the same throughout the building. The cost of forming the column and its head has been estimated here at 15 dols. each. This is done for convenience in arriving at a total cost of the column shaft. Ordinarily this is neglected in making comparative estimates of interior round columns, as it costs about the same to form a round column of small diameter as it does a column of larger diameter. Many other schemes may be designed for this particular column and the comparative costs estimated. However, these several examples, some of which are obviously too expensive to consider, will suffice to give the reader a working knowledge of the methods of calculation employed to determine the costs of the various types of interior columns. It is readily appreciated that even though a larger column were somewhat cheaper to build, the additional floor space occupied by this larger column might be worth more to the owner of the building than he would save in the construction of the column. Hence it becomes necessary to consider the value of this additional floor space as a part of the cost of this larger column. It is difficult to say what this floor space is really worth. However, a satisfactory way to deal with the situation is to consider the smallest column designed as a basis to which the other columns are to be compared. This column is 24 in. in diameter. Consider the area of floor space occupied by a column equal to the square of the diameter of the column. The additional area occupied by any one of these larger columns is equal to the difference of the square of the diameter of the column in question and the square of the diameter of the smallest column designed. This additional or lost floor area is priced at a unit cost equal to the approximate unit cost per square foot of floor space of the completed building, including heating, lighting, sprinkles, etc. The unit cost per square foot of building is calculated by dividing the approximate total cost of the building by the number of square feet of floor space in the building, measurements to be taken "out to out" of the floor plan. For example, a building 200 x 6 ft. and five stories high may cost 165,000 dols. complete. This works out at 2.75 dols. per sq. ft., and for general purposes this will give fairly accurate results for the purpose described.

In the comparative estimates of the interior column given, if we strike out of each estimate the cost of lost floor space, the relative cost of each column will remain unchanged. This is not always the case, and even in our examples it will be noticed that the columns having the leaner mixes show up much more favourably when this item of cost is excluded from the total cost of the column. Frequently the omission of this item will result in a transposition of the economic order of the various designs. In many buildings the loss of a few feet of floor space is immaterial, but in other cases it is of great importance, as in storehouses or in buildings where the machinery layout would be interfered with by a larger column. Where loft buildings or offices are rented by the square foot of net area, the cost of this floor space should be figured at a considerably higher figure than the one given.

In determining the economical wall column the method is very similar to that used for interior columns, except that the item of the cost of wood forms enters into the estimate. It will be necessary also in designing exterior columns to consider the width carefully, as every inch added or deducted to the width of the column will change the corresponding dimension of wall sash a like amount.

Consideration is given below to the economical design of a typical wall column for a concrete building having these columns spaced 20 ft. on centres.

The cost of each wall column design includes the cost of sash and glass together with the curtain wall necessary to fill in one bay. For convenience in making these estimates it is assumed the glass is factory

TABLE II.

Scheme (a)... 36 x 24 in. 12⅞ in. rd. rods 17 ft. 6in. ⅜ in. rd. bands 12 in. o/c	Conc.	86 cu. ft. at 34c.	$29.24
	Forms	143 sq. ft. at 15c.	21.45
	Reinfct.	777 lb. at 5c.	38.85
	Curtain walls	31 sq. ft. at 75c.	23.25
	Window sill	17 lin. ft. at 60c.	10.20
	Sash and glass	204 sq. ft. at 45c.	91.80
	Total		$214.79
Scheme (b)... 30 x 24 in. 10 1⅛ in. rd. rods 17 ft. 10 in. ⅜ in. bands 12 in. o/c Mix 1 : 1½ : 3	Conc.	71⅞ cu. ft. at 36½c.	$26.16
	Forms	129 sq. ft. at 15c.	19.35
	Reinfct.	651 lb. at 5c.	32.55
	Curtain wall	32 sq. ft. at 75c.	24.00
	Window sill	17½ lin. ft. at 60c.	10.50
	Sash and glass	210 sq. ft. at 45c.	94.50
	Total		$207.06
Scheme (c)... 30 x 22 in. 12⅞ in. rd. rods 17 ft. 2 in. ⅜ in. rd. bands 12 o/c Mix 1 : 1 : 2	Conc.	46 cu. ft. at 43c.	$19.78
	Forms	124 sq. ft. at 15c.	18.60
	Reinfct.	460 lb. at 5c.	23.00
	Curtain wall	32 sq. ft. at 75c.	24.00
	Window sill	17½ lin. ft. at 60c.	10.50
	Sash and glass	210 sq. ft. at 45c.	94.50
	Total		$190.38

TABLE III.

Scheme (a) Reinforced type (mix 1 : 2 : 4)	Conc.	460 cu. ft. at 34c	$156.40
	Forms (none)		
	Reinf rcement	460 lb. at 5c.	21.00
	Excavation	19¼ cu. yd. at $1.00	19.25
	Backfill and level	19¼ cu. yd. at 30c	5.78
	3-in. sheeting (close)	182 sq. ft. at 12c	18.20
	Total		$220.63
Scheme (b) Plain type	Concrete 1 : 2½ : 5	507 cu. ft. at 32c.	$162.24
	Forms (top block)	84sq. ft. at 15c	12 60
	Excavation	24 cu. yd. at $1.00	24.00
	Excavation below 5 ft. mark	5½ cu. yd. at $1.50	8.25
	Backfill and level	29½ cu. yd. at 30c.	8.85
	3-in. sheeting (close)	270 sq. ft. at 10c	27.00
	Total		$242.94

ribbed glass costing 20 cents per sq. ft., including glazing. Steel sash is estimated here at 25 cents per sq. ft., erected and pointed, making a total of 45 cents per sq. ft. for the sash and glass in place. The curtain wall below the sash is figured here at 75 cents per sq. ft. In making the sketches of the exterior wall bay for estimate purposes, no care has been exercised to select stock sizes of steel wall sash. In actual practice, however, this is usually of prime importance. The cost of the extra floor space occupied by the larger wall column has not been considered here as its influence on these particular columns would be negligible.

(To be continued.)

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Our Office Table.

The curved kerb-stones at a street-crossing are subjected to severe friction from the wheels of heavy vehicles, whereby they are quickly worn away. Frequent renewals disturb and break up the set material of the footway, especially where the materials are asphalt. To avoid this it is proposed (*Beton und Eisen*, Aug. 5, 1918) to make the curved corner-stone of reinforced concrete. The experiment has been made in Munich, with good results. A cast-iron skeleton is partly enclosed in the concrete, making a curved block one metre in length, with an iron face towards the traffic. Several illustrations show the form of skeleton and the finished block. The first cost is greater than that of granite and harder kinds of stone; but the duration of the block is much longer. The concrete mixture consists of one part of Portland cement and three parts of sharp sand.

A valuable weapon in our coming struggle for commercial supremacy is the directory published in the Russian language for circulation in Russia. The first edition was published in 1915, and had a notable success, though the subsequent developments in Russia necessarily robbed those directly concerned of much of the fruits of their enterprise. The second edition is just completed. Its object is to place in the hands of Russian merchants a complete epitome of representative British and Canadian manufacturing and trading houses. Its 700 pages cover every branch of manufacture and business. The Russian buyer gets immediate access in his own language to the names, addresses, and specialities of those British houses who are desirous of opening up trade relations with Russia; and the fact that such houses have taken space in this directory is a direct indication of their desire to trade with Russia—a very important feature in the directory's utility. The directory is well edited, carefully classified under trade headings in sections and sub-sections, and the indices being printed in Russian and English simplify quick reference for readers of both nationalities. The directory is published by the Russo-British Trade Exchange, Ltd., in connection with the Dorland Agency, Ltd., 16, Regent Street, London, S.W.1. The price of the directory is 10s., plus 9d. postage.

An Army Council Instruction (1,088) states that in view of the present position regarding man-power and supply of material and fuel, the War Cabinet has recently ordered that the War Priorities Committee should issue instructions that no new works shall be started except such as are immediately necessary for winning the war, and that any exceptions to this rule shall be brought to the notice of the Committee only on the personal authority of the Minister of the Department in question. Each Department is to be instructed to carry out a thorough investigation into its manufacturing and construction programme, and to report within a fortnight to the Works Construction Sub-Committee the works now in hand which require a high priority and those which might be postponed. On receiving the reports the War Priorities Committee should decide whether any regrading is necessary. The criterion whether a new work is directly necessary for winning the war is to be rigorously applied by those concerned, in every case, before requisitions for work are put forward. The Army Council considers that the only practical way to apply the orders of the War Cabinet is to exercise very careful discrimination between demands and real needs; anything and everything in the way of convenience, as apart from necessity, must be ruthlessly cut out of every programme that involves building.

At Chester Consistory Court, last week, the Chancellor granted several faculties for war memorials in Cheshire churches. The rector of West Kirby was given permission to erect in West Kirby Church a brass tablet as a memorial of Second-Lieut. Kenneth Hinde, King's Own Royal Lancaster Regiment, who was killed in France on February 3, 1917. The Rev. W. Taylor Warburton and the wardens of Holy Trinity Church, Hoylake, obtained a faculty to erect a brass tablet as a memorial of Sergeant Sidney Jackson, R.F.A., who was killed in action in France in 1917. Mr. William Parry, Riverside, Port Sunlight, was given authority to erect in the parish church of Bebington a brass tablet as a memorial of his son, Hugh Percy Parry, The King's (Liverpool Regiment), who was killed in action in France in July, 1916. The Rev. H. Magrath Lefroy, M.A., incumbent of Lower Peover, was granted a faculty to remove the present pavement tiles in the chancel of the church and to substitute a pavement of black and white marble, also to erect on the oak panelling of the chancel a brass tablet bearing a suitable inscription as a memorial of Major Thomas Heald Guest, York and Lancaster Regiment, who was killed in action on July 1, 1916. Among other faculties granted were the following:—The Rev. E. L. Bond and the wardens of St. Luke's, Lower Tranmere, to remove the dossal at present in the church and to erect in its place a reredos and brass tablet as a memorial of many who have worshipped in the church. The Rev. H. Russell Sherwen, St. Jude's, Tilston Fearnall, to erect in the church a marble tablet as a memorial of the late Mrs. Isobella Harding. The Rev. John Henry Thorpe and wardens of the Church of St. George, Southport, to erect screens of oak in the north chapel of the church. The Rev. T. N. Dodd and wardens of the new parish of St. John, Buglawton, to erect on the north-west side of the porch a choir vestry as a memorial of the Rev. Herbert Gardner, B.A., vicar of the church from 1908 to 1918.

Mr. S. S. Platt, who has retired from the position of borough surveyor of Rochdale, was on Monday week presented with a handsome oak bureau by the chief officials of the corporation. The town clerk (Mr. W. H. Hickson) presided. After tea the presentation was made in a happy speech by Mr. T. B. Ball (gas manager) as the senior official; Mr. T. Stenhouse (borough analyst), another old servant; and Mr. H. Yarwood, who is acting temporarily as surveyor, supporting. Mr. Platt's long service with the corporation, his personal qualities and his varied interests all came in for tribute. A characteristic reply was made by Mr. Platt. A pleasant social evening was spent by the officials, who were all in attendance with the exception of Mr. S. Boothman (borough treasurer), whose absence was caused by bereavement, and Mr. F. W. Brookman, sanitary works manager.

The Women's Housing Committee of the Ministry of Reconstruction, presided over by Lady Emmott, issued an interim report last Thursday night. They regard it as essential that each house should contain as a minimum three rooms on the ground floor (living room, parlour, and scullery) and three bedrooms above, two of these being capable of containing two beds, while larder and a bathroom are essential. It cannot be too strongly emphasised that a regular and efficient hot-water supply is a *sine qua non* from the point of view both of personal cleanliness and of labour saving. We take it for granted, continues the report, that a garden will be attached to every house. We welcome the provision that not more than twelve houses should be built to the acre, in order to allow space not only for good-sized individual gardens, but also for a common playground for each considerable group of houses. The committee also advocates self-contained cottages for families, while some cottage flats might be provided for old people, childless couples, and single persons.

Paper 10 of the Professional Papers of the Corps of Royal Engineers is a valuable summary of the needs of "Temporary and Semi-Permanent Water Supplies" of Camps and Cantonments. It covers the whole field, including tools, fittings, pipes, valves, etc., and is very fully illustrated. It will be found equally useful by all interested in the construction of temporary and semi-permanent structures, in which water supply is a primary need, and contains much valuable information not to be found in ordinary books of reference. The experience of Major V. P Smith, R.E., has been turned to very valuable account, and the short note on American war cantonment water supply is especially useful, bearing in mind the excellent results obtained therein due to the wisdom of the American Government, which has not hesitated to employ its leading engineers, with the result that excellent water-supply arrangements have been secured at small cost and very rapidly. The Paper is published by W. and J. Mackay, Ltd., Chatham, at 3s. 6d.

Mr. Reginald Brown, the new president of the Institution of Municipal Engineers, has been engineer and surveyor to the Southall-Norwood Urban District Council since 1901. His experience embraces almost every phase of municipal engineering. He received his training under the city surveyor of Peterborough, and his first appointment was as assistant surveyor to the Brentford Local Board. He was afterwards chief assistant to that veteran municipal engineer, the late Mr. Charles Jones, of Ealing, with whom he remained for nearly seven years. He left Ealing on being appointed chief surveyor to the Metropolitan Vestry of Stoke Newington, but by the London Government Act his office was abolished. For a time he was contractor's engineer during the construction of the Brighton electric tramways, and, as before stated, was appointed to his present office in 1901. He was a member of the Institution of Civil Engineers, a Fellow of the Surveyors' Institution, a member of the Institution of Municipal and County Engineers and of the Royal Sanitary Institute, and an honorary member of the Association of Managers of Sewage Disposal Works.

At a meeting of the Portsmouth Chamber of Commerce a discussion took place on a motion—"That no Government department or public body in any part of the country should be permitted immediately after the war to commence any large building scheme, unless of national importance, without reference to and in consultation with the local advisory committees in the districts likely to be affected in respect of local conditions, until roads, railways, and public and private work of a minor character have been completed. Further, this chamber puts forward as its opinion that while this work is being completed manufacturers will be in a position to replenish their stocks, and workmen will be returning and preparing for the larger works which may then be necessary." A number of alternative resolutions were submitted, which were finally abandoned in favour of the original motion by Mr. Privett, which, with the insertion of the word "urgent" before "national importance," was passed by nine votes to five.

The death is announced, killed in action on July 22 last, of Harry Bury Popplewell, Captain, Royal Irish Rifles, attached King's African Rifles, younger son of the late Frank Popplewell, architect, of Manchester, and of Mrs. Popplewell, Northwood, Middlesex, in his thirty-second year.

An unusual point as to workmen's compensation was raised at Walsall County Court last Wednesday in a case in which Elizabeth Jinks, widow, of Willows Road, had sought an award against Joseph Dixon (Walsall), Ltd., saddlers' tool manufacturers. Applicant's husband, Thomas Jinks, was formerly works manager employed by the respondents, and whilst following his occupation was attacked and murdered by a discharged workman. It was stated that the firm denied liability, but had paid £235 into Court, which applicant was willing to accept. Judge Smith accordingly made an order for her to receive the money.

At Bow Street Police Court, on October 8, before Mr. Graham Campbell, Charles Dupont, aged forty-five, described as an engineer, of Stacey Street, Charing Cross Road, was charged on remand with having, as an alien, furnished false particulars and made false statements as to his nationality. The defendant, it was stated, had represented himself to be of French or Belgian nationality. Giving evidence on oath, the defendant stated he was born at Grenoble. He admitted that he had been convicted at Aix and Nimes, and that he had then given false names as he did not wish his identity to be known. Latterly he had been working for a munitions firm in Stacey Street. Mr. Graham Campbell sentenced the man to six months' imprisonment with hard labour, and said that he would also be recommended for expulsion.

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Memorial Tomb in Granite, Highgate Cemetery Messrs. Banister Fletcher and Sons, Architects.
Union Park Gardens, a Model Garden City for industrial workers, Wilmington, Del. Messrs Ballinger and Perrot, Architects, Philadelphia.
Lyvedon Old Building, Northamptonshire. Sketch by Mr. Maurice B. Adams, F.R.I.B.A.
Gretna and Eastriggs Housing Scheme, near Carlisle, for the Ministry of Munitions. Doctor's house and houses at Eastriggs, Type IX. A. Carried out by a group of architects under the Direction of Mr. Raymond Unwin, F.R.I.B.A.

Currente Calamo.

Mr. P. C. Cowan, D.Sc., M.I.C.E., the Chief Engineering Inspector to the Irish Local Government Board, who, in August last, was instructed to give some general ideas as to a complete scheme for housing the working people in Dublin, has published his Report, which by the direction of the Lord Lieutenant has been sent to the Dublin Corporation. Of the special needs of Dublin we have no intimate knowledge, but the Report is an eminently business-like one, and includes the results of investigation, which have been collected with much perspicacity, and on which recommendations are based, which are practical and likely to effect their purpose. Mr. Cowan is of opinion that the required houses should be erected by a Board representing the Government, the City of Dublin, the Urban Districts of Rathmines, and Pembroke, and Dublin County, the members of which should not exceed eleven in number, and should hold office for ten years. The necessary houses, he advises, should be built by Societies of Public Utility, with dividends restricted to 5 per cent., and under conditions of letting at rents fixed at some definite percentage of the cost of the houses, say, 8 per cent. He is in favour of cottage homes, and he quotes with approval the articles of Mr. Robert Thomson in the series of "The Perfect Dwelling," which we recently published. The total necessary expenditure he estimates at £8,640,000, viz., £6,600,000 for 16,500 new houses at £400 each, and £2,040,000 for the acquisition and reconstruction of 3,800 old tenement houses. In a series of appendices, Mr. Cowan discusses at length the materials and methods of construction to be employed, the standard of rooms, types of accommodation, and the most desirable methods of administrative and legal expenditure. Quite apart from the special needs of Ireland these appendices form a valuable résumé of information which not a few of our own local authorities and officials interested should get and read, drafted as they are with succinctness and really practical acquaintance with the problems concerned, in welcome contrast with a good many reports and recommendations we have had lately this side of the water.

The great scheme for an Empire war memorial is now so far advanced that a meeting is to be held on October 31, at 4 p.m. at Caxton Hall, Westminster, adjoining the St. James's Park Station, at which the designs and plans will be explained by the architect, Major Pawley, V.D. Lord Leverhulme has taken a prominent part in bringing this important movement to fruition, and is to preside at the meeting. The Advisory Committee, with the Marquis of Crewe at its head, is a thoroughly representative body, and includes many distinguished sculptors, painters, actors, politicians, and men of affairs. We shall illustrate the scheme, which is an all-embracing one of most suitable character and purpose in our next and subsequent issues.

The Ministry of Health Bill has been recast, and its title altered to the Ministry of Health and Local Government Bill. The change is probably designed to put the Insurance Act administration under the Local Government Board. The Welsh Insurance Commission, it is said, is wiped out, provision being made for an office of the Local Government Board in Wales. It is proposed that Scotland and Ireland should each have a separate Ministry of Health Bill on the lines of the English Bill. The friendly societies and trades unions have issued a joint manifesto in opposition to the Bill on the ground that it links up existing institutions with the administration of the poor law. The industrial insurance people are divided on the subject, some being inclined to support in the hope of getting the Bill amended. The Irish approved societies will, we expect, oppose a Bill for Ireland on the lines indicated.

Builders generally, and especially in London, cannot but be interested in the legal rights and remedies of the authorities controlling the supply of water. Like most of our public concerns, they are an autocratic lot, full of fight, at the cost of the ratepayers and the people, and always anxious to pile up precedents for future use and pressure. The recent case of "Metropolitan Water Board *v.* David" shows how there may be many latent flaws in the foundations of their high proceedings. The defendant here happened to be a lawyer, and a K.C. at that. He had been summoned by the Board for £4 6s. 6d. as the cost of opening and reinstating the roadway in front of his house in Finchley Road. The work had been done in order to find the cause of a leakage of water which the Board's people could not locate, trace, or discover. It would not have been necessary for the actual repair of the leakage if it could have been located by the Board's engineers. The defendant had been served with a notice to repair or renew the leaking pipe itself, and this he had obeyed. Then the Board claimed payment from him of these charges for opening and making good the roadway, under Section 71 of the Board's (Various Powers) Act, 1907. The County Court judge found in favour of the plaintiffs, but gave defendant leave to appeal, which he did, successfully. The clause in question provides that where the Board finds there is a wastage of water "by reason of any injury to, or any defect in, any communicating pipe" they may do the necessary repairs and charge them on the premises as if they were water rates. In the High Court two judges were quite clear that, under this section, the Board could not make the defendant pay the cost of their "exploratory operation" (as surgeons call it) for finding out where the leakage was. The Board must make up their minds where the defect was before setting about its repair. They could not recover the expense of their investigating work in the roadway to discover the cause of the leakage. So the defendant's appeal was allowed in the usual way, with costs following the event.

Pigs—except of lead, much akin, after all, to our food controllers—are not much in our line, but we cannot refrain from endorsing up to the hilt the strictures in his letter to the *Evening News* of the 18th instant of Mr. Archibald D. Dawnay, many times Mayor of Wandsworth, and the veteran chief of the well-known firm with which so many of our readers have pleasant relations. Mr. Dawnay asks:—

"Whatever ails the Food Controller and his advisers that, after ordering regulations to be relaxed and calling upon everyone to get pigs on the land anywhere and everywhere, he should suddenly say all the pigs must be killed, because there is no food, which I do not believe? It is the wickedest and most outrageous instruction—or put it mildly, if you like, and say suggestion—ever issued from his department.

"I have worked hard and taken the greatest personal interest in this large borough of 350,000 people to set up piggeries; a large sum of money has been spent by many co-operative societies and private owners in establishing what has turned out so far a most successful venture.

"I do hope and trust that every pig-keeper

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in the kingdom will shout his loudest and compel the Food Controller to reverse his stupid suggestion.

"No wonder Mr. Cautley throws up office. Only a few days ago in this borough he was praising all that we had done and bid us go full speed ahead."

We hope the great "War Museum" we are promised will not lack a suitable collection of food controllers. As curiosities little else will rivet such melancholy interest. Meanwhile, Madame Tussaud's might really add them to the chamber of horrors!

The dearth of small houses and dwellings is so great in Zurich that the municipality has decided to take the matter in hand and provide suitable accommodation. A limited competition was decided upon in which five selected architects submitted designs. The design which was placed first was that of Bräm Bros., and the work is to be carried out in accordance with their design. A block plan and plan and cross section of one of the buildings is given in *Schweizerische Bauzeitung*, August 31, 1918, from which it appears that the buildings will be grouped in two squares. On the east and west sides of each square the buildings will extend for the full length of the sides of the square, but the blocks on the north and south sides will be shorter, to permit of entrance to the central portions, which are laid out as gardens, and also to permit of better circulation of air. A long extract from the assessor's report on the competition is reprinted in the journal, from which it appears that the two-room dwellings were to comprise: a living-room 13 sq. metres, bedroom 15 sq. metres, kitchen 10.75 sq. metres; and for the three-room dwellings: a living-room 13.65 sq. metres, bedrooms 13 and 13.23 sq. metres, and kitchen 10.75 sq. metres, the height in the clear to be 2.5 m. The architects had to furnish with their plans binding estimates from builders, a requirement scarcely known in England. The estimate for the approved design was Fr.51 per cubic metre (say, 13.8d. per cubic foot), with a wartime increase of 20 per cent. added. The total cost to the municipality for the scheme in question will be about £126,000.

The scathing but most righteous judgment by which Mr. Justice McCardie has decided that the British Medical Association is not entitled to inflict professional ruin upon doctors who refuse to fall into line with its views or the views of its local branches is not without its lesson for all professional combinations of the kind. The case of "Pratt and Others *v.* the British Medical Association and Others" turned upon the fact that certain doctors at Coventry were ostracised and boycotted by the others and by the Association for doing something which they had a perfect right to do. The Judge found that the Association is "void of the slightest statutory authority," that it has sought to make its writs run even against those who are not members of it, and that it has assumed to itself "a jurisdiction more far-reaching, and perhaps more potent, than that of the General Medical Council." Damages have been awarded against the Association and the individual defendants to the extent of £3,500. Every great profession should organise to ensure the protection of the public and the preservation of its own standard of conduct. But an endeavour to ruin men who, as in this case, preferred to continue their services to an old dispensary when the majority of their colleagues had transferred themselves to a new one, especially when, as the Judge found, the boycotters were more or less influenced by pecuniary motives, was a piece of high-handed tyranny as discreditable to the British Medical Association as it was dangerous, ultimately, to the public.

The Board of Trade, in conjunction with the Board of Education, and with the advice of representative members of the Royal Society of Arts, the Arts and Crafts Exhibition Society, the Art Workers' Guild, the Design and Industries Association, and various persons and organisations connected with manufacture and commerce, have framed a scheme for the establishment of a British Institute of Industrial Art with the object of raising and maintaining the standard of design and workmanship of works of industrial art produced by British designers, craftsmen, and manufacturers, and of stimulating the demand for such works as reach a high standard of excellence. The Institute will be incorporated under the joint auspices of the Board of Trade, as the Department dealing with industry, and the Board of Education, as the authority controlling the Victoria and Albert Museum, and the methods by which it is proposed to achieve its objects include:—A permanent exhibition in London of modern British works selected as reaching a high standard of artistic craftsmanship and manufacture; a selling agency attached to this exhibition; a purchase fund for securing for the State selected works of outstanding merit exhibited at the Institute; the establishment of machinery for bringing designers and art workers into closer touch with manufacturers, distributors, and others; the organisation of provincial and travelling exhibitions of a similar character, either directly or in co-operation with other organisations. In addition to the governing body which will be responsible for the general management of the Institute, it is proposed to constitute an independent Selection Committee consisting of persons of outstanding reputation and position in relation to design, craftsmanship, and manufacture, and no works will be eligible for exhibition which have not been submitted to and approved by this committee. It is intended that articles of craftsmanship not intended for multiplication and trade products mechanically produced shall both be eligible for exhibition provided that they comply with the conditions, including those relating to British design and workmanship, and reach the required standard. Probably there will be two sections of the exhibition for articles of craftsmanship and trade products respectively. It is not at present intended that the exhibition of the Institute shall be actually opened until after the war, but all preparatory steps are being taken so as to avoid delay when peace has been restored. It is hoped that the Exhibition will be permanently open to the public, except possibly on special days on which admission may be confined to duly accredited trade representatives on the lines of the British Industries Fair. Arrangements will be made for the continual replacement of exhibits that are purchased or withdrawn. A commission will be charged on sales effected through the Institute. The scheme has been framed, and will be worked in close co-operation with the Council of the Royal Society of Arts, whose own scheme for the encouragement and co-ordination of movements towards the development and improvement of industrial art includes as one of its objects the support of the proposed institute. All communications should be addressed to the Secretary, British Institute of Industrial Art, Board of Trade, 7, Whitehall Gardens, S.W.1. The intention is good, doubtless, but we have little confidence either in the Board of Trade, or the Board of Education as the proposed joint controlling authority, and we should like to know a little more about the personnel of the "independent Selection Committee." If manufacturers and others whose interest it is to multiply reproductions of objects by the thousand are to predominate it will not help real craftsmanship much.

LONDON HOUSING AFTER THE WAR.

The report of the Housing of the Working Classes Committee of the London County Council, which we briefly mentioned last week, has been issued. It reviews in considerable detail the position of the county as regards population, the supply of houses and rooms, overcrowding, land for building purposes, transit facilities, and a number of other contributory factors which render the problem clear enough as far as its demonstration goes, but leave the reader confronted with uncertainties which render any empirical attempts at its solution out of the question. Not that there is any attempt to exaggerate difficulties or to discourage effort. On the contrary, facts, as far as they are obtainable, are fairly enough marshalled, and it is honestly admitted throughout that deductions therefrom are likely enough to be misleading owing to the many circumstances likely to affect the future of London, over which no one has any direct control. The report, indeed, throughout, bears most creditable witness to the discretion and zeal which have characterised the action of successive Housing Committees of the Council, and which alone could have accumulated the experience on which it is based. It will well repay the careful study of all concerned, especially architects, builders, utility undertakings, and the municipal authorities throughout the Kingdom, who are faced with the complex task of making good the arrears of the past ten years.

In a summary of the results of their inquiries the committee state that as regards population the position of the county is substantially stationary. Assuming the county to be considered as a whole, additional accommodation is consequently not necessary under this head, except to meet the transfer of residents from the central to the outlying districts. The figures with regard to overcrowding, however, show that this evil will exist on a sufficient scale at the end of the war to justify the Council in hastening its existing pro-

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gramme of building under Part III. of the Housing Act.

With regard to unsuitable accommodation, it is estimated that on areas of an insanitary character about 184,000 persons are affected. Many unhealthy houses are fit only for demolition, but many others, although at present unsuitable for occupation, could be renovated and made habitable, at any rate, for a limited period, if the local authorities put into operation their powers to compel the landlord to make the houses in all respects reasonably fit for human habitation.

The committee's general conclusion is that housing conditions are, and at the end of the war are likely to be, unsatisfactory to a considerable extent, and that ameliorative measures will be necessary on a larger scale and at a more rapid rate than has hitherto been possible. The Council is not, however, the sanitary authority for the administration of the law as to overcrowding and the sanitary condition of the houses, and concerted action with the metropolitan borough councils is necessary for the strict enforcement of the law. As to land available for housing purposes, the report says that on the north side of the Thames small opportunity for building exists, but on the south side there are considerable areas not yet fully developed for building purposes, both in the south-east and the south-west. It is, however, impossible to say that sites in those localities will be available for speedy development, since the existing transit facilities are quite inadequate for the transport of a large additional population. How vitally the question of transit affects the incidence of housing will be realised when it is remembered that, approximately, about 410,000 persons of the working classes travel twice daily to and from their work at cheap reduced rates, for whom the railway companies do comparatively little, and the motor-buses, which get the use of the roads gratis, nothing at all. It is but too evident that, other things being equal, any increase in fares must favour residence in the more central districts as compared with the outlying districts, and so operate to increase further the high rents in the central districts. Any increase in workmen's fares in the future is therefore likely to affect seriously the housing question in London.

The section of the report dealing with the various agencies providing housing will probably more especially interest our own readers. The Government has not done much. Before 1915 it did nothing, but in that year, to meet the needs of the great increase of workers at Woolwich Arsenal, it undertook three schemes: one at Eltham, consisting of cottages and cottage flats, comprising 1,297 tenements with a total of 5,567 rooms, and 2,352 hutments in Woolwich, Greenwich, and Bexley, with 9,408 rooms.

The London County Council, during the past twenty-five years, has provided dwellings containing nearly 29,000 rooms, which are occupied by about 38,000 persons, and three lodging-houses, containing 1,874 cubicles, at a cost of about £3,000,000. At present it has three estates developing at Norbury, Old Oaks, and White Hart Lane, which will house 8,412 more, at an estimated (pre-war) expenditure of £671,402. Full details of these were given by us of the Council's work, and more especially of the three schemes last mentioned, on pp. 42, 62, 97, 115, 135, 155, and 175 of our last volume, the latter being illustrated, by the courtesy of the Housing Committee and the kindly co-operation of Mr. W. E. Riley F.R.I.B.A., the superintending architect, whose zeal during his whole term of office has so beneficially seconded the wise policy of the successive Housing Committees.

The City of London's contribution has been limited to a total of 1,119 rooms. The metropolitan borough councils have only provided 6,024 rooms, supplemented by an additional total of 1,178 rooms in purchased and renovated houses. Of the ninety-two "Extra London Authorities" having powers under the Housing Acts, only twenty-five have schemes in hand or prepared, twenty-two of which provide for 2,073 houses. Thirty-six more are willing to prepare or further schemes, the suggested schemes for eighteen of these being for 3,675 houses.

The four leading philanthropic trusts for working-class house provision are the Peabody Donation Fund, the Guinness Trust, the Sutton Trust, and the Lewis Trust. The last-mentioned two have also schemes in hand at Birmingham and Newcastle. So far the Peabody Fund has provided 15,869 rooms; the Guinness Trust, 5,325; the Sutton Trust, 2,877; and the Lewis Trust, 1,710 rooms. The Sutton and Lewis Trusts have still part of their original bequests unexpended. The balance available in the case of the Lewis Trust amounted at the end of 1916 to £368,258, and the Sutton Trust to probably about £1,286,000, part of which would, however, be applicable to schemes in the provinces. The Peabody and Guinness Trusts are dependent for funds for fresh building on the surplus income as received year by year. This surplus amounted to £49,400 in the year 1916 for the Peabody, and to £14,800 for the Guinness Trust. These two Trusts could no doubt also anticipate the receipt of such income by borrowing, as was done by the latter some years ago. The Trusts have the following schemes in hand:—The Peabody Trust has acquired or arranged for the purchase of a site in Fulham Palace Road in the neighbourhood of Hammersmith Broadway, consisting of about 6¾ acres. The Guinness Trust has recently acquired a site of about 2 acres in Kennington Park Road, on which it is proposed to erect block dwellings containing about 220 tenements with 550 rooms. The Sutton Trust has at present no scheme in hand in London, but it is negotiating the purchase of a site in Islington. The Lewis Trust has a scheme partly completed in Warner Road, near Camberwell Green. It was proposed to erect fifteen blocks of dwellings, containing about 340 tenements with 800 rooms, on this site, of which four blocks have been completed, but these are at present in the occupation of the War Department. The above-mentioned schemes would probably provide a total accommodation of nearly 2,500 rooms.

The amount of housing provided by employers for their employees in London and the neighbourhood appears to be very limited. A certain amount is provided by local authorities as employers. The Council itself, for instance, provides accommodation for employees in the fire brigade, main drainage, and parks services. The total accommodation provided by employers of labour for their employees is, however, so small as to have no material influence on the solution of the problem.

Owners of landed estates in London or the neighbourhood have themselves rarely undertaken the erection of houses, but they have in almost all cases let the land on building leases. With the falling in of the leases, which is now taking place to a considerable extent in the part of London developed between eighty and one hundred years ago, the houses come under the control and management of the freeholders. In some of the larger estates where the houses are in a condition to justify the adoption of this course, new leases for as long as forty years, at a rent substantially less than the full rental value, are granted. In other cases the sites are cleared and re-let on building leases. Among the estates upon which working-class dwellings have been erected by the owners are those of the Duchy of Cornwall and the Ecclesiastical Commissioners. The former is proceeding with the reconstruction of its estates in Lambeth, and has in recent years erected a considerable number of working-class dwellings. The Ecclesiastical Commissioners have done the same in Lambeth, Southwark, and Westminster.

Societies for the provision or improvement of working-class houses form another category of housing agency. For the purposes of Section 4 of the Housing, Town Planning, etc., Act, 1909, a public utility society is defined as "A society registered under the Industrial and Provident Societies Act, 1893, or any amendment thereof, the rules whereof prohibit the payment of any interest or dividend at a rate exceeding five pounds per centum per annum." The section in question authorises the Public Works Loan Commissioners to lend to such a society two-thirds of the value of the land or dwellings, instead of one-half which the Commissioners are authorised by the Act of 1890 to lend to a company, society, or individual for the provision of working-class dwellings. The only public utility society registered under the Act of 1893 which has provided any considerable number of working-class dwellings in London is the London Housing Society, Limited, which has in recent years provided about 1,900 rooms in St. Marylebone and St. Pancras.

A substantial but not a large amount of housing has been provided by limited liability companies in London. Particulars with regard to sixteen of the principal of these companies which are available show that their combined capital expenditure amounts to over £7,000,000, and the accommodation provided by them consists of about 83,000 rooms. Most of the companies were established many years ago, and their operations in recent years have not been extensive.

Railways and other statutory companies are under an obligation to provide housing accommodation in lieu of that which they acquire and demolish under compulsory powers. Under this provision, railway companies have provided in London a certain amount of housing accommodation, and a few other companies a little. The total amounts to about 3,500 tenements containing about 8,000 rooms. The number of persons for whom accommodation is provided is generally much less than the number displaced.

PRIVATE ENTERPRISE.

The main part of housing accommodation in the past has been provided by private enterprise. Though this term covers some of the other activities already referred to, it is usually taken to denote the private individuals who make a business of developing estates for the erection of houses or undertake the actual building of the houses thereon. There are two distinct sides to the enterprise, although in a number of instances the two functions are combined in the same individual. One branch deals with the purchase of land in bulk and its development, sometimes letting in smaller blocks to building contractors, who may also be financed through the machinery of the land developer; the other is the builder who actually erects the houses. The importance of this agency is evidenced by the fact that upwards of 96 per cent. of the working-class dwellings

(*Continued on page 282.*)

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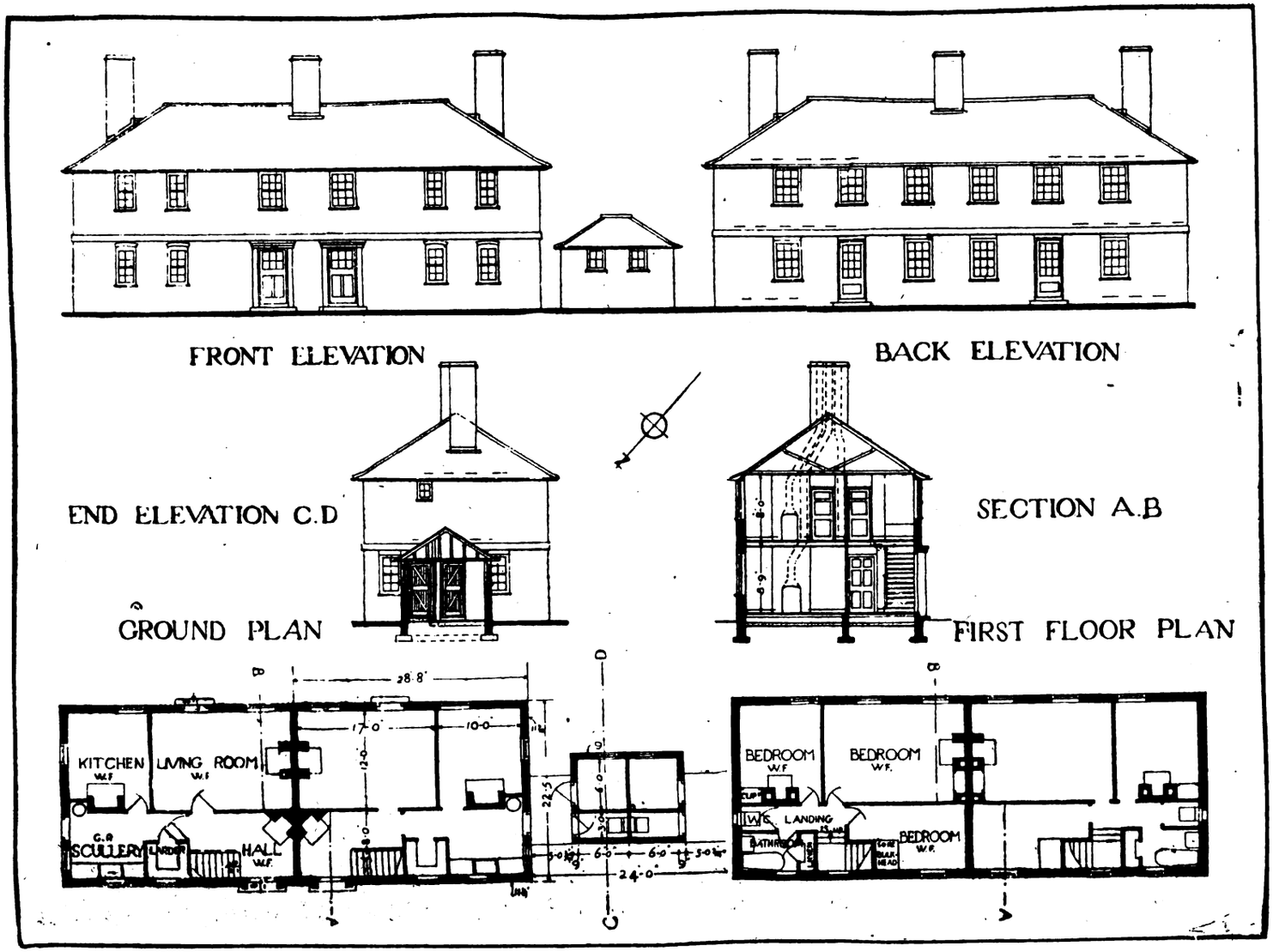

GRETNA HOUSING SCHEME, EASTRIGGS: HOUSES TYPE IX. A.

Carried out by a Group of Architects under the Direction of Mr. RAYMOND UNWIN, F.R.I.B.A.

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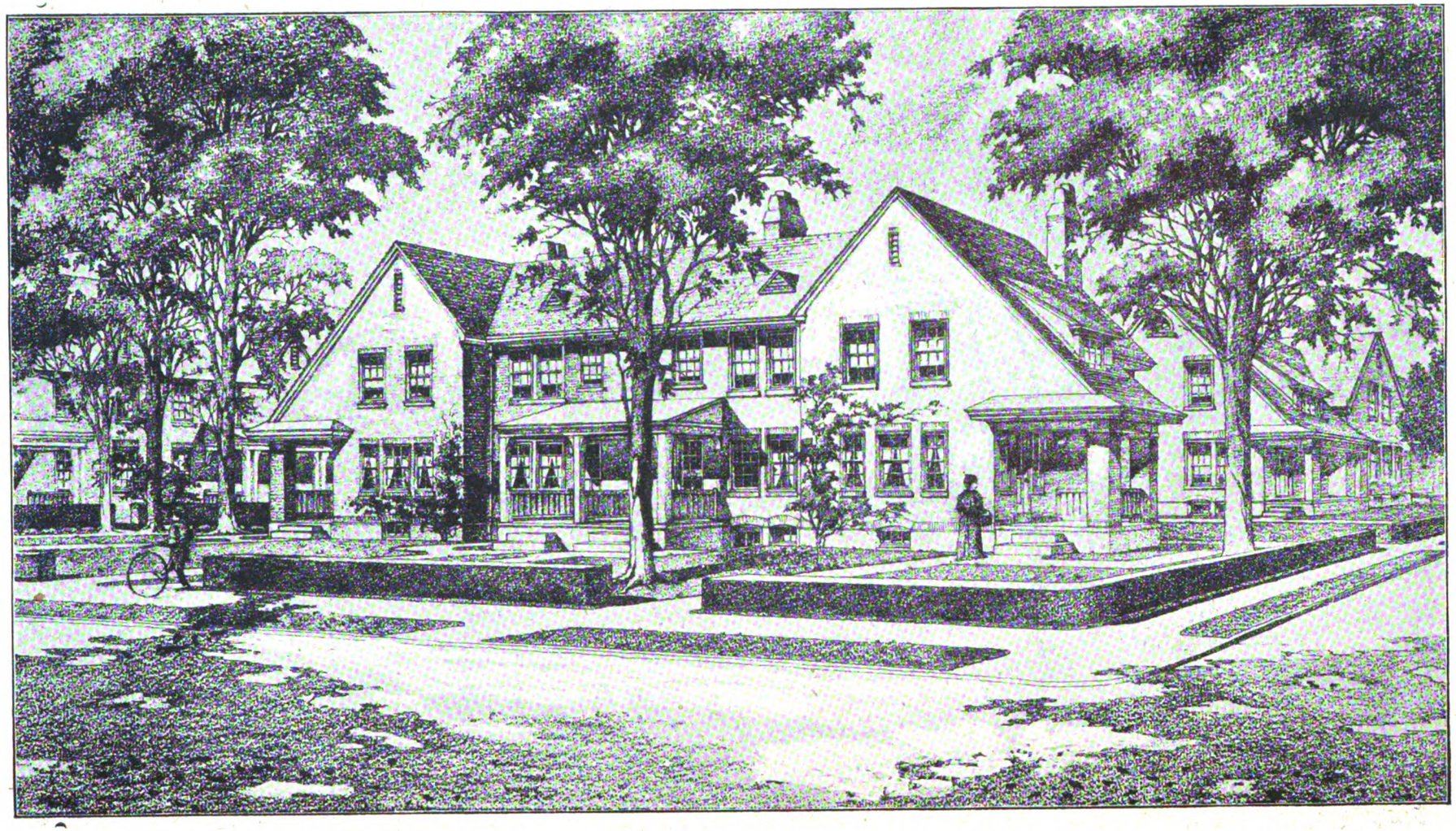

UNION PARK GARDENS, A MODEL GARDEN CITY FOR INDUSTRIAL WORKERS, WILMINGTON, DEL.
Messrs. BALLINGER and PERROT, Architects, Philadelphia.

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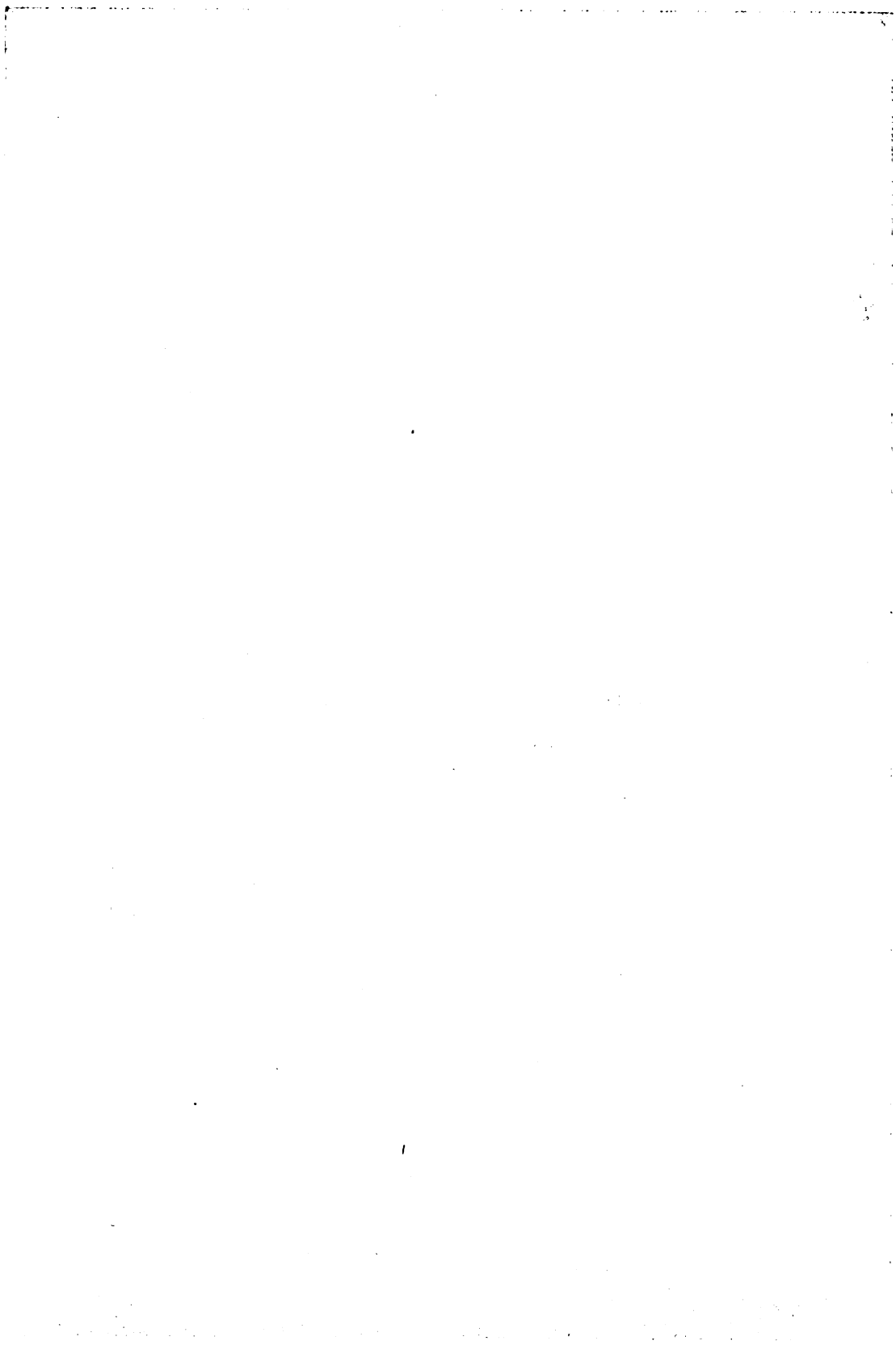

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A HOUSE AT AMERSHAM, BUCKINGHAMSHIRE.
Lieut. JOHN HAROLD KENNARD, A.R.I.B.A., Architect.

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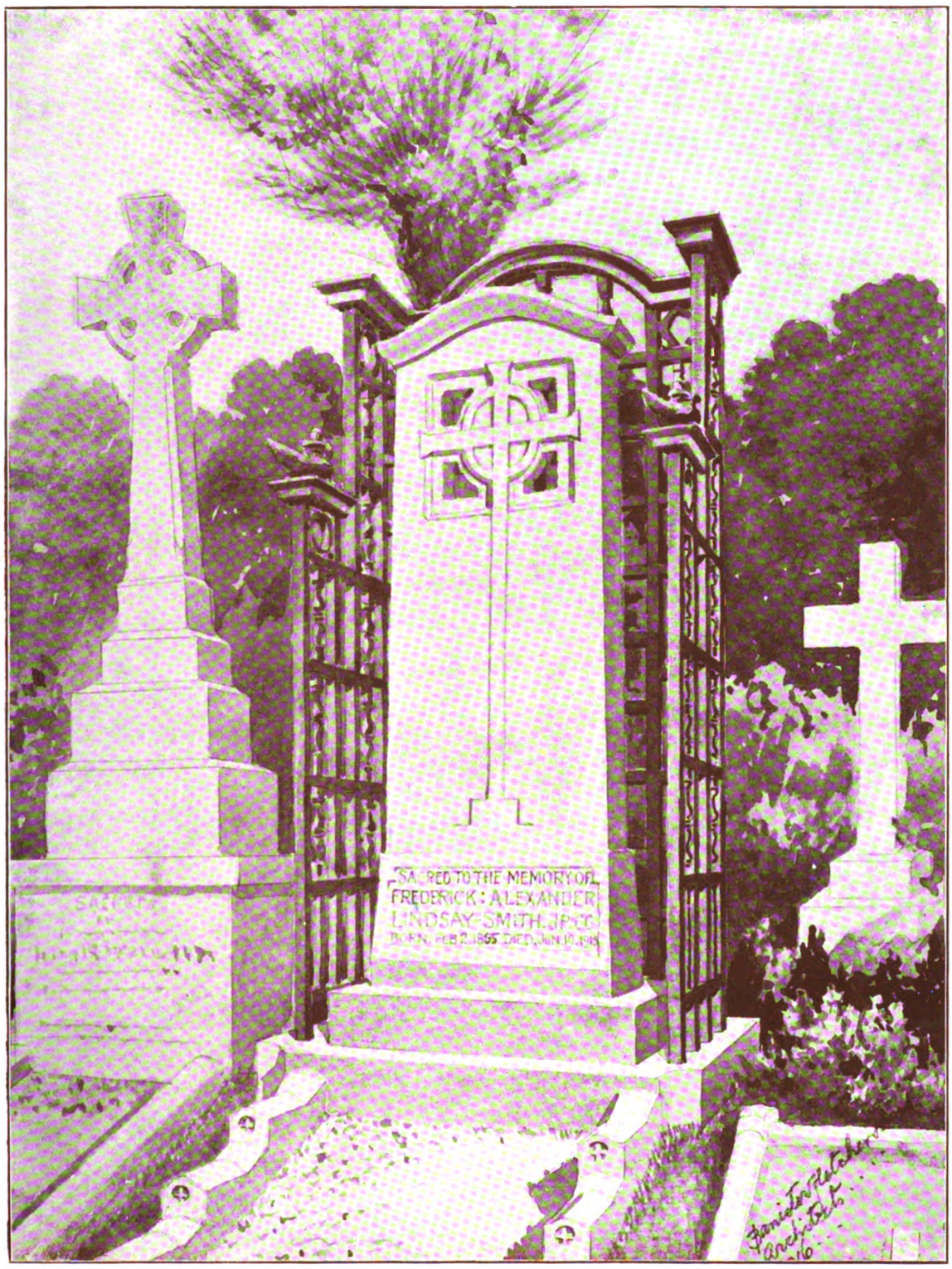

MEMORIAL TOMB IN GRANITE, HIGHGATE CEMETERY.
Messrs. Banister Fletcher and Sons, Architects.

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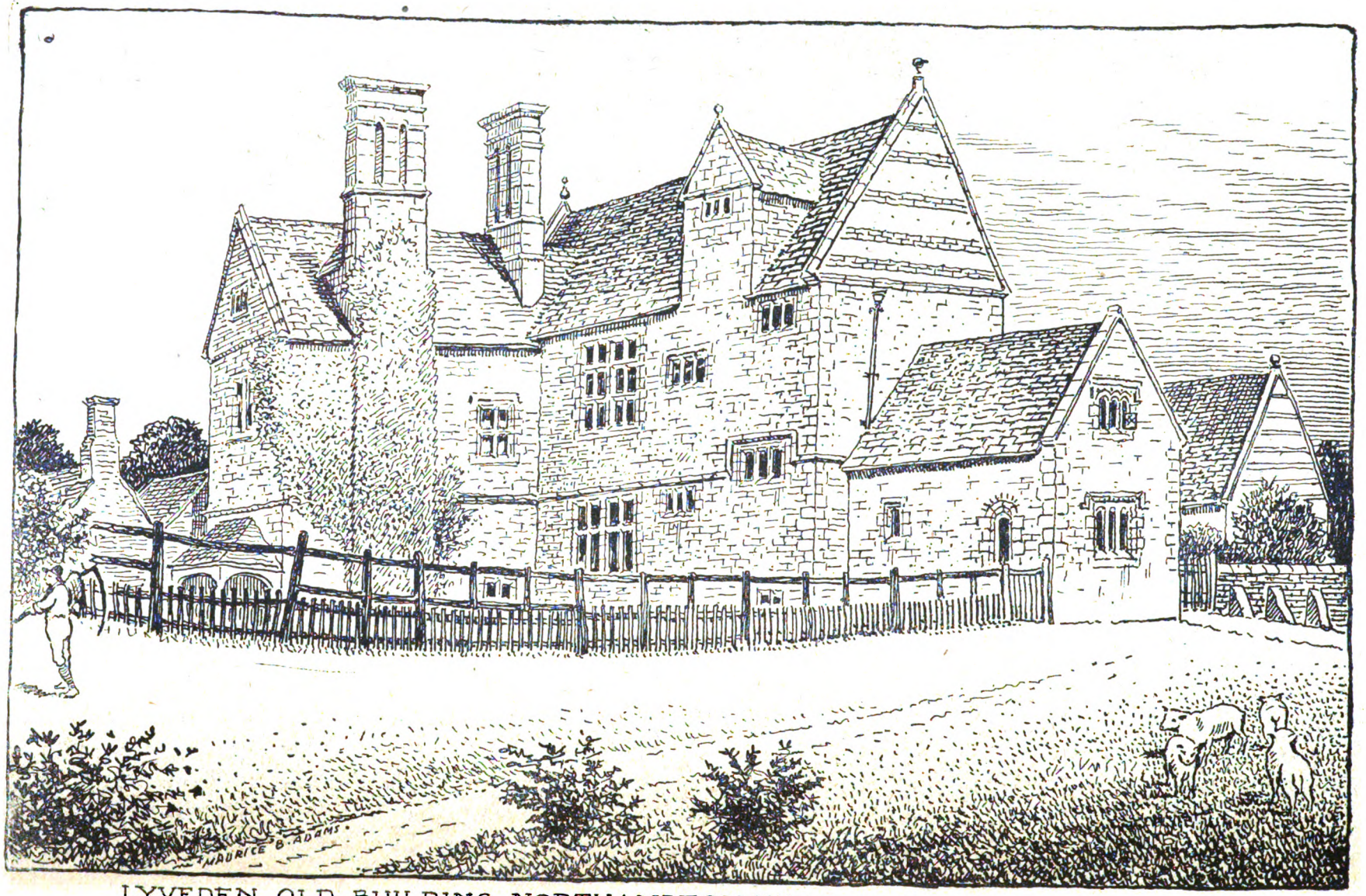

LYVEDEN OLD BUILDING, NORTHAMPTONSIHRE. SKETCH BY MAURICE B. ADAMS F.R.I.B.A.

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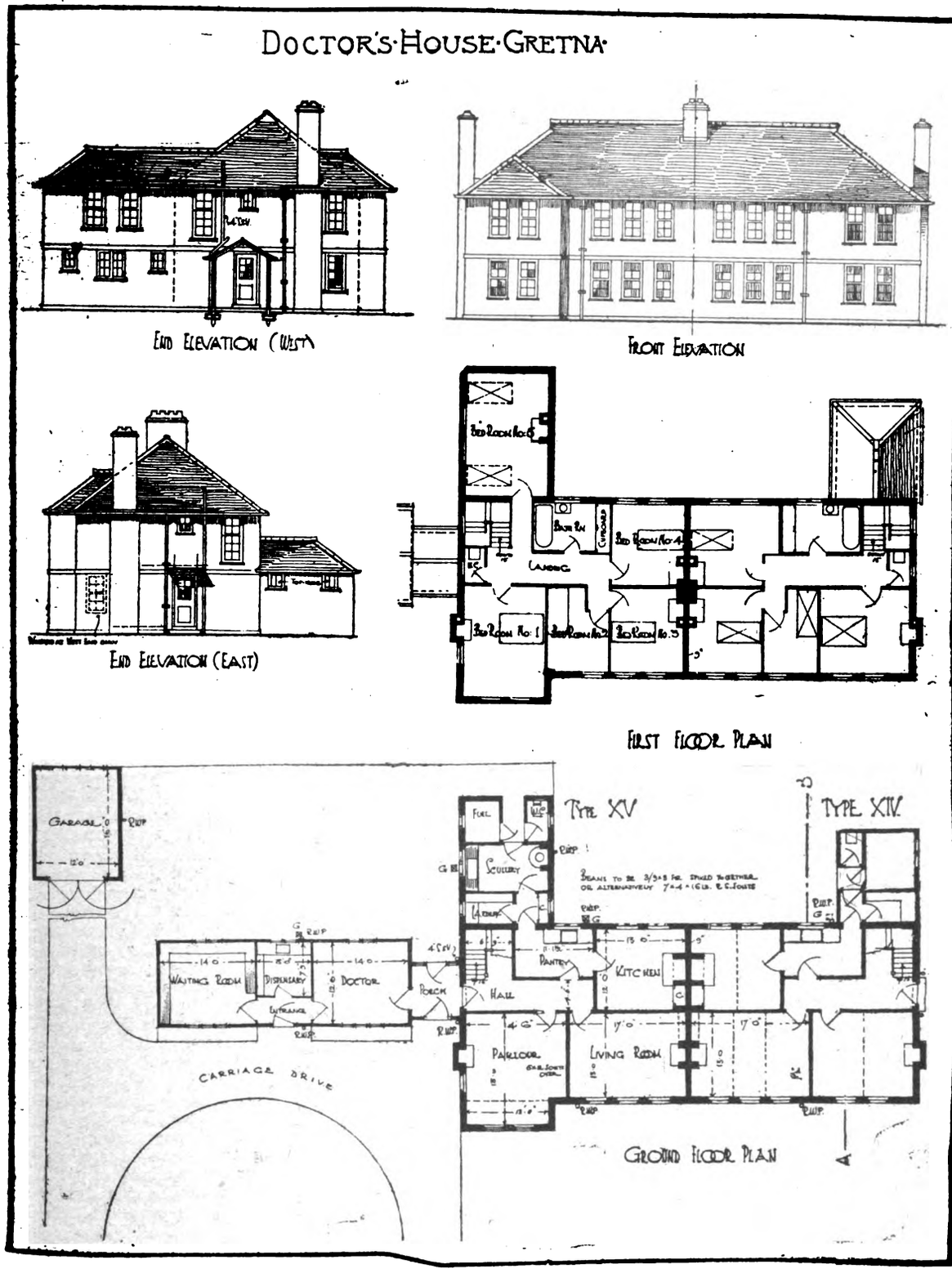

GRETNA HOUSING SCHEME, EASTRIGGS: THE DOCTOR'S HOUSE.

Carried out by a Group of Architects under the Direction of Mr. RAYMOND UNWIN, F.R.I.B.A.

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LONDON HOUSING AFTER THE WAR.

(*Continued from page 271.*)

throughout the United Kingdom have been provided by means of private enterprise. As a rule the actual builder of the houses possesses only a relatively small capital, his business being dependent upon ready facilities for borrowing in order to provide means to carry on his operations. Before entering upon a building scheme he invariably arranges for advances of capital to be made during the progress of his work, without which he is unable to proceed. He does not build to hold, but to sell, and as his margin of capital is small he is dependent upon a ready sale for the carrying on of his operations. It will be seen, therefore, that the problem of private enterprise is not solved with merely securing that private persons should build houses. It would be necessary to find a market for these houses when built in order that the private builder might continue his operations. The purchasers of this description of property fall, broadly speaking, into two classes, viz., those who purchase for occupation, and those who purchase for investment—a much larger class. Any substantial increase in the cost of production will necessarily react upon the market for the houses, and alternative and more attractive investments will influence both classes of purchasers, rendering it more difficult for private enterprise to dispose of the houses built.

BUILDING SOCIETIES.

Building societies have not in the past, generally speaking, directly provided housing accommodation. Their activities, which have been very important, have assisted purchasers to buy for occupation or investment in small blocks, and in this way they have assisted the builder to continue his operations. The advances by building societies in recent years have been as follows:—

Year.	Amount of advance on mortgage.	
	United Kingdom.	London.
	£	£
1910	9 390,700	2,565,437
1911	9,004,093	1,912,079
1912	8,438,256	1,746,868
1913	9,244,570	2,075,803
1914	8,874,618	1,967,280
1915	6,623,184	1,880,140
1916	5,002,505	1,040,119

In the years preceding the war, the advances amounted to over £9,000,000 a year in the United Kingdom, and about £2,000,000 a year by London societies. The proportion of these advances in respect of working-class property is not known, but a notable feature of the returns is the large proportion of small mortgages by London societies as compared with provincial ones. The percentage of mortgages of £500 and under in seven of the principal London societies ranges from about 50 per cent. to about 85 per cent of the total mortgages outstanding. Under the Small Dwellings Acquisition Act, 1899, local authorities are empowered to advance money to enable persons to acquire ownership of small houses up to a market value of £400 each. Little has been done under this Act in London, the loans outstanding (1916) by the London County Council being only £2,505 in respect of the purchase of seventeen houses, and by the metropolitan borough councils (1914), £2,325.

Appendix 4 shows the amount of housing accommodation provided and demolished in London and the neighbourhood in each year from 1902 to 1916. For the years since 1911 the figures relate to the whole of Greater London. In the years 1902-7 a considerable amount of housing accommodation was provided in London, but even in these years it was much less than in extra-London. From 1908 the amount provided in London fell to small proportions, and in two years it was exceeded by the demolitions, which in all years have been considerable, and in some years very large. As regards Greater London, the largest provision in any year shown by the figures was about 64,000 rooms in 1903, which, if complete figures were available, would probably be increased to about 70,000 rooms for the whole of Greater London. In the years 1902-11 (which approximately covers the last inter-censual period) the annual average number of rooms provided amounts to about 42,000 rooms in the part of Greater London to which the figures relate, and, as far as can be estimated, to about 55,000 in the whole of Greater London. Allowing for demolitions the figures would be respectively about 36,000 and 49,000 rooms. The average annual increase of the population in the ten years 1901-11 was 67,000 persons, which, on the basis of three-fourths, would give about 50,000 persons of the working-class. The supply of houses during the period appears to have been in excess of the demand, and a considerable increase in vacant accommodation took place between 1901 and 1911. In the whole period of fifteen years from 1902 to 1916, the net amount of accommodation provided was less than 27,000 rooms a year in the part for which complete figures are available, or about 37,000 rooms for the whole of Greater London. This was probably somewhat less than the requirements during the period, as can be judged from the position with regard to vacant accommodation at the present time. At the beginning of the period, however, there was also a shortage of accommodation in some districts.

HOUSING AFTER THE WAR.

The Housing of the Working Classes Committee propose to submit with regard to the provision of houses for the working classes the expenditure by the council of about £500,000 a year for seven years after the war—i.e., a total outlay of £3,500,000, partly for housing and partly for dealing with insanitary areas. They ask for the grant by the State of a percentage of the loan charges sufficient to relieve the Council of 75 per cent. of the estimated annual deficit on the erection of all dwellings erected under the Act of 1890 for at least seven years after the completion of the buildings, with a final adjustment of the contribution by the State thereafter based on the difference between the then value of the dwellings and the outstanding debt thereon. This means that the Council shall expend during the seven years after the war as much as it has spent during the whole period of the nearly thirty years of its existence, the net capital expenditure incurred by the Council up to March 31, 1918, having been £1,146,164 for clearance schemes and £2,353,717 for dwellings and estates under the Housing Acts, making a total of £3,499,881. It is important to bear in mind that, while the loan charges in respect of the capital outlay of £1,146,164 fall upon the rates, the loan charges on the capital expenditure of £2,353,717, or 67 per cent. of the whole, are met out of the rents of the dwellings, and have involved no charge on the rates, the policy of the Council having been that all dwellings erected by it should be self-supporting; and, taking the dwellings as a whole, this object has been achieved. It is estimated that the rents obtainable during the years immediately following the termination of the war will not be sufficient to meet the increased loan and other charges due to the necessarily high cost of building and the high rate of interest upon the capital employed. If this be so, it will create an emergency situation, due to the war, which will necessitate a departure from the sound economic policy of avoiding a charge on the rates for dwellings. The Government, in announcing their policy in regard to housing after the war, have not found it possible to estimate what will be the financial effect thereof, and for similar reasons it is impossible to forecast what will be the ultimate effect on London rates of the proposed expenditure of £3,500,000.

Our Illustrations.

HOUSE AT AMERSHAM, BUCKS.

This photograph of the entrance front of a house built at Amersham was shown at the Royal Academy this year. It is erected in brick, with a plastered upper story and half-timber picturesquely used, surrounded by a good garden, and roofed in tiles. The architect is Lieut. John Harold Kennard, R.E., A.R.I.B.A., 9, Railway Approach, London Bridge, S.E.

MEMORIAL TOMB IN GRANITE, HIGHGATE CEMETERY.

This memorial was erected upon the tomb of Mr. F. A. Lindsay-Smith, J.P., a well-known member of the Corporation of the City of London, the stonework being of fine-axed rose-coloured granite of Corennie, and the metal work of cast bronze. The idea animating the design was to express dignity and repose without ostentation, and the novel introduction of the bronze screen was due to the desire to mask some other monuments in the background. The architects were Messrs. Banister Fletcher and Sons, 29, New Bridge Street, E.C.4. The drawing which we have reproduced was shown at the Royal Academy Exhibition this last season.

UNION PARK GARDENS.

A MODEL GARDEN CITY FOR INDUSTRIAL WORKERS AT WILMINGTON, DEL.

The influx of many additional ship-workers and their families, to carry out the shipbuilding programme of the Emergency Fleet Corporation, has overtaxed and exhausted Wilmington's present local housing facilities, so it became imperative to provide many additional houses. No provision being made, the Liberty Land Company, of Wilmington, was organised to meet these requirements, hence the Union Park Gardens development, which is one of the many housing projects now in course of construction. The site is located on the outskirts of Wilmington, and includes about fifty acres of beautiful farmland, one portion of which, adjoining the woodland section to the south, at present reserved as parkland, is wooded with magnificent trees. A brook flows through the property. Messrs. Ballinger and Perrot, of Philadelphia, are the architects acting in association with Mr. John Nolen, the well-known town planner of Cambridge, Massachusetts. The site is connected with Wilmington proper and its shopping district by two trolley lines, one on Union Street and one on Lancaster Avenue, the latter giving direct transportation to and from the shipyards of the Pusey and Jones Company, Harlan and Hollingsworth, and the American Car and Foundry Company, which may be reached in ten minutes by their employees. The plans include all the essentials of a thoroughly organised town. In addition to the houses and apartments there will

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be a Community Building and a sufficient number of shops and stores to meet local needs. Union Park Gardens consists of 506 houses, including 399 of the group type and 104 semi-detached and three detached. A school building is included. The Community Building provides recreation and amusement. This building contains an auditorium, with stage and dressing rooms on the main floor, which is large enough to accommodate 1,000 persons. On this main floor are also located the club and lunch rooms, with reading rooms opening from them, a sort of rendezvous where the shipworkers may meet to discuss the happenings of the day. The basement is devoted to game rooms, a smoking room, and a bowling alley. At the rear of the auditorium balcony, on the second floor, are located the community dispensary and social service rooms. The houses are mostly of the six-room and bath type, with a front porch, living-room, dining-room, and kitchen on the first floor, and three bedrooms and a bath on the second floor. There is ample attic space above the bedroom ceilings, which is well ventilated front and back to keep these rooms cool in the hot summer weather. This attic space has no living accommodation, but may be used for storage. There are a few houses of the four-room type, having a front porch, living-room, and combination kitchen and dining-room on the first floor and two bedrooms and a bath on the second floor. The bathroom opens upon the second floor hallway and not upon bedrooms. The plans call for ample closets in all living-rooms and bedrooms, with both gas and electricity for illumination, gas for cooking, warm air heat, and modern plumbing and fixtures. Laundry trays are located in the basement, conforming to the local custom. The houses mentioned, being larger than needed by many of the married workmen without children, it has been necessary to provide 30 flats, consisting of living-rooms, dining-rooms, kitchen, bedroom, and bath on a single floor. Messrs. Ballinger and Perrot, the architects and engineers, have planned these houses two rooms deep to give every room sufficient light and ventilation, with rooms of ample sizes for their various purposes, and have made the accommodations and interior arrangements, as well as the construction, conform to the requirements of the housing division of the Emergency Fleet Corporation. The erection of this garden city was commenced last June. The first houses are expected to be ready for occupancy this autumn.

LYVEDEN OLD BUILDING, NORTHAMPTONSHIRE.

The Manor House at Lyveden was known as the "Old Bield," in contradistinction from Sir Thomas Tresham's emblematically curious and unfinished cruciform house intended for his own occupation. Although only a few years' difference in age, this ruined structure is still termed "the new building." It stands quite close to the Manor House, now illustrated. Sir Thomas may have built both, but, anyhow, the "old building" belonged to his family, and stood "in godely meadows, an ancient Manor place." The immediate surroundings must have had a palatial character at one time, judging from the monumental gateway which was taken down in the middle of the last century and set up at Farming Woods. The Elizabethan scrollwork on the top of this gateway above the fascia and cornice is very boldly designed, and possibly may be partly modern. The heraldic shields in a row over the arch and the big niches in the side piers give the frontispiece a dignified importance well adapted to such an approach. There are still traces to be seen of terraces and a formal garden lay-out, but these are becoming obscure, for the property has long been utilised as a farm, and naturally the old appropriate setting has suffered. The style of the house is quite typical of Tresham's mannerisms, and generally it harmonises with the contemporary domestic work of the locality, one of the richest parts of Northamptonshire. There is not much historical information available concerning this "Old Bield." The house contains some excellent features, notably the Jacobean staircase, which is very like the one at Pilton Rectory, once a manor. The massive newels are panelled in the solid and terminate with nicely shaped finials. These posts are well framed with bold strings and handrails. The richly moulded pendants to the newels add greatly to the picturesque appearance where they show below the rakes and ceilings. There are excellent balusters in the spandrels, all mortised into the framings. The stone fireplaces to some of the apartments, including the attic, are very refined in detail, with stopped mouldings and set-offs on the jambs below. The arched heads are Tudor in treatment, similar to the doorway on the landing. The tall stone chimneys are representative of the county in their style, and have frieze and cornice, with also interspaces between the ashlar-built flues. The lofty stone dormer seen in the sketch accords with the type of Northamptonshire, with the invariable stone cheeks, mostly supported by extra stout roof timbers. In the capital monograph "The Buildings of Sir Thomas Tresham," the first of Mr. T. Alfred Gotch's series of architectural folios, some particulars of this Manor House at Lyveden are given, and in The Building News for August 25, 1882, will be found a sketch by Mr. Gotch of the staircase, also some other details, including besides an exterior view of the south-east side, but taken from a different standpoint to that of our sketch reproduced to-day.

HOUSINGS FOR MUNITION WORKERS AND OTHER BUILDINGS, GRETNA GREEN AND EASTRIGGS, NEAR CARLISLE.

We began a series of illustrations of this big enterprise by giving the general plan of the township at Eastriggs in our issue for October 2. A double page appeared then of the institute for both sexes and shops, forming part of the same premises. The houses of Type VIII.D. also furnished further working drawings lent us for publication by the architects. On the 16th inst. a double page was devoted to the illustration of the Village Hall, with other sheets of the chief engineer's residence and some of the ordinary workers' housings. To-day the Doctor's House and Type IX.A Cottages are given. The description issued with the first plates may be referred to for leading particulars. The designs are the work of a group of architects acting under the direction of Mr. Raymond Unwin, F.R.I.B.A., for the Ministry of Munitions.

A huge concrete chimney has been completed at Saganoseki, in Japan. As it is 570 ft. high, it will tower 260 ft. above the head of the great birds on the Liver Building at the Pierhead, Liverpool, and nearly 100 ft. over the top of New Brighton Tower. At the base it is 43 ft. external diameter, tapering to 27 ft. 6 ins. at the summit. There were 530 tons of steel reinforcements used, and the pressure on the base is 6,000 lbs. to the square foot.

ECONOMY IN THE DESIGN OF COLUMNS FOR CONCRETE BUILDINGS.

By Clayton W. Mayers.

(*Continued from page 267.*)

In the design of concrete footings it often happens that it is difficult to decide offhand whether a plain or reinforced concrete footing should be used. A design of each type of footing should be made and the comparative costs calculated. The engineer knowing the kind of soil these footings will rest upon should price the excavation required at a proper figure. This is a very important part of the footing cost, in fact, many times the most vital part of the estimate for foundation work. In the absence of any more reliable information the unit costs of excavation per cubic yard (not over 5 ft. deep) may be assumed as follows:—

Loam or other easy excavation	$0.75 cu. yd.
Gravelly earth containing small stones	$1.00—$1.50 cu. yd.
Frozen earth	2.25— 2.50 cu. ft.
Rock or ledge excavation	3.50— 4.00 cu. yd.
Backfill	.10 sq. ft.

For excavation work over 5 ft. deep and down to 10 ft. deep, the unit cost on the yardage below the 5 ft. depth should be increased approximately 50 per cent. An example is given below with comparative costs for two types of footings, reinforced and plain. The excavation is assumed as costing $1 per cu. yd. to remove, and the excavated holes are sheeted close in order to do away with form work around the large footing block.

As above shown, the reinforced footing is the most economical to use in this case. However, provided stones or "plums" were obtainable at a small expense, the cost of the plain footing could be considerably reduced. It will be noted in the estimates for these two footings that the excavation for the plain footing is the determining factor in its cost. The materials used in the plain footing cost somewhat less than those used in the reinforced type, but the extra depth of the excavation makes the plain type the more expensive one to use. This extra cost becomes still greater when the unit cost of digging increases. In case the reinforced type of footing is built with a sloping top, and a wood form is used for this top, the cost would be about the same as though the concrete were poured up to a level with the top of the footing, and the form work omitted, as above estimated. In some operations the top part of a footing is sloped and the concrete poured "dry." This necessitates a change in the batch, slows up operations, and many times does not work out economically. For estimating comparative costs of footings it is not a safe procedure to assume that the top part of the footing will be poured "dry" in order to do away with forms on the slope. Either estimate a form for this sloping surface or figure on the concrete as being poured up to a level with the top of the footing.

It has been previously stated that in the design of the beam and girder type floor the omission or addition of one intermediate beam per bay may influence the cost materially. Although this problem is usually handled economically by engineers designing concrete buildings which have usual floor loadings and column spacings, it sometimes happens that when unusual floor loadings and column spacings are required it is necessary for the engineer to determine a lay-out which will show the most economy. In a proposition of this kind it is first necessary to make the design which looks most likely to be the economical one. Then two more designs should be made, one having one more intermediate beam and the other having one less intermediate beam. Sometimes the girders should be run in other ways and designs made on lay-outs entirely dissimilar. Cost comparisons made of these designs will show conclusively which system should be adopted.

For the purpose of illustrating the methods of estimating beam and girder floors with a view to economy, two schemes, designed for the same column spacings and live loads, are estimated here in

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a comparative way. Only these two lay-outs are compared here, but other lay-outs should be estimated in a similar manner, bearing in mind that the more beams and girders in the floor the more expensive the form work becomes.

In scaling the quantities for the comparative estimates of these two designs, it will be necessary to include all the concrete forms and steel reinforcement in one 18-foot bay for the full width of the building, which is about 67 ft. 6 in. In the first the quantities will be necessary to include all the concrete 7 intermediate beams, 2 wall beams and 4 girders. In the second the corresponding quantities will include the slab over one complete bay, 11 intermediate beams, 2 wall beams and 4 girders. Below are the respective quantities to which unit prices have been fixed (a list of which will be found in Part 1), and the total comparative cost of one bay for each scheme estimated.

ESTIMATE, FIRST SCHEME.

Concrete, 825 cu. ft. at 34c	$280.50
Forms, 1,860 sq. ft. at 13c	241.80
Reinfct., 7,300 lb. at 5c	367.00
Total	$887.30

(Unit cost, 73 cents sq. ft. of floor.)

ESTIMATE, SECOND SCHEME.

Concrete, 700 cu. ft. at 34c	$238.00
Forms, 2,000 sq. ft. at 14c	280.00
Reinfct., 6,300 lb. at 5c	315.00
Total	$833.00

(Unit cost, 68½ cents sq. ft. of floor.)

In "scaling off" the quantities for comparative estimates of beam and girder type floor, care must be taken to carefully consider the laps in the reinforcement. All steel reinforcement actually occurring in the slab and beams should be estimated. In taking off the quantities, also, it will be found most convenient to first get the quantity of concrete, then the square feet of forms, and lastly the pounds of reinforcement. The order of scaling for the form work and reinforcement should be the same as that followed in getting the quantity of concrete, that is, if beams follow slabs in the concrete scaling, beam steel should follow slab steel in the reinforcement scaling. This method will eliminate to a large extent the liability of error, and also lessen the work of scaling dimensions, since the form areas may be taken directly from the scaled dimensions of the concrete work.

The slight changes in column and footing design which might actually occur in two buildings designed with floors like those above estimated have not been considered here as the details of column and footing costs are treated elsewhere. However, in buildings several stories in height this phase of the design should be carefully considered in conjunction with the cost of floor designs when the cost comparisons are made. Even though the spacing of columns remains the same for all schemes considered, the different dead loads may influence the cost of the columns and footings considerably, and the different girder depths may make it possible to vary the over-all height of the columns in order to get the same clear head room.

INTERIOR AND EXTERIOR PAINTING UNDER WAR CONDITIONS.*

By J. Lawrance.

There is little need for us to discuss the extent to which the painting industry has been affected by the war. Rotting timbers and rusting steel work are in sufficient evidence to render a clear view of the seriousness of the situation to all those who are in the habit of watching the life of structures, and time will impress the same facts upon others less observant.

But if we have to adopt as inevitable a partially unsatisfied need for preservation of our buildings, we can at least give careful consideration to that amount of interior and exterior painting with which it is still possible to proceed, particularly as regards the selection of material. It is with the object of investigating the possibilities of executing durable work with materials now procurable that this paper is offered. It is not merely a question of new materials against old ones, for some of the materials which are used almost universally to-day for certain purposes have been obtainable for years, but have been persistently rejected by some painters through sheer prejudice, whilst others equally old, not procurable to-day, were adhered to because their use was traditional.

Perhaps the redeeming feature of the serious position now facing us is that it carries us back to rock-bottom principles underlying the technique of painting, and forces us to consider materials in the light of their traditional use. In order to examine the materials at our disposal from this standpoint, it is necessary first to briefly define those principles, and I quote from some of my notes on the subject that have already been published.

NOTES ON THE FUNCTIONS FULFILLED BY THE INGREDIENTS OF PAINT UNDER THE FOUR HEADINGS, VIZ., PIGMENT, BINDER, THINNER, DRIER.

(1) Pigment.—Mainly useful as a colouring agent, but also acts to some extent as a filler in combination with the binder. Some pigments, such as red lead, combine chemically with the oil to form a kind of varnish with good protective powers.

(2) The Binder (generally oil) is used to hold the particles of pigment together, and also helps to secure a smooth protective coat. The binder is also a filling agent on porous surfaces, the oil entering the pores of the surface while in the fluid state, and then oxidising to a leather-like substance (see driers) and thereby stopping suction. The quantity of oil also regulates the gloss.

(3) The thinner is added with a view to rendering the paint more fluid in consistency, making it more workable and more penetrative into absorbent surfaces. Turpentine used in paint for priming woodwork has the effect of slightly dissolving some of the natural resin in the wood, thereby bringing about a secure attachment between the paint and the wood, but it should not be used in excess at the expense of the filling properties of the paint. Spirit acts indirectly as a drier, because it allows the oil to be spread over a larger area, i.e., exposes it to a larger amount of oxygen and, therefore, hastens the drying.

(4) The Drier.—Linseed oil is said to dry when it becomes oxidised. By combining with oxygen it undergoes a chemical and physical change, a leather-like solid taking the place of the liquid. This action does not stop as soon as the paint feels dry, but goes on for a great length of time, until the paint perishes. Therefore, it will be clear that the longer the paint takes to dry the longer it is likely to last. Driers are added to paint to assist the oil in drying, so that the surface will be hard in a reasonable time, but it will be seen from the above remarks that an excess of drier is very undesirable and will cause early perishing or cracking. An excess of drier often delays hardening, because the surface of the paint dries so quickly that it forms an impervious layer that effectually prevents the paint immediately under this skin from drying, as it cuts off the supply of oxygen. The oil in this undried paint subsequently sweats through to the surface and causes resoftening; moreover, the top skin being harder than the paint underneath will crack when the soft paint begins to move under the influences of expansion and contraction, caused by varying weather conditions.

GENERAL NOTES ON DRIERS.

It is necessary to reduce the common drying agents, as they are so strong in their native state that the quantity could not be easily gauged if used full strength. Reduction in this way cannot be called adulteration, unless the drier is extended unnecessarily.

The methods of reducing are as follows:—

Patent Driers—with barytes, whiting, etc., and ground in oil.

Terebine—with spirit and a little oil. (In this case the drier is held in suspension by the addition of rosin or other resinous matter.)

(To be continued.)

* A paper read at the last meeting of the Society of Architects.

Correspondence.

THREATENED APPROPRIATION OF THE ADELPHI.

To the Editor of The Building News.

Sir,—A meeting has been arranged by the London Society, to be held in the Hall of the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, on Thursday, October 24, 1918, at 4.30 p.m., to consider the grave risk now threatening the Adelphi Estate (which is full of priceless relics of the Adam Brothers' work) by reason of its proposed appropriation by the Air Board.

While we are only too anxious for patriotic reasons not to stand in the way of any Government work, we are firmly of opinion that more suitable premises could be found than are available on this estate, because its houses are of small area and could not be made suitable for the purposes of the Air Ministry without irreparable damage being done to the exquisite interiors.

The Rt. Hon. Lord Aberconway, P.C., K.C., has kindly promised to preside at the meeting.

Yours faithfully,

Aston Webb,
Chairman of Council.

The London Society,
27, Abingdon Street, Westminster.
S.W.1., October 12, 1918.

PROFESSIONAL AND TRADE SOCIETIES.

The Surveyors' Institution.—The programme of papers to be read at the ordinary general meetings of the Institution has now been arranged. The opening address of the President, Mr. John Hubert Oakley, the senior partner of the firm, Messrs. Daniel Smith, Oakley, and Garrard, will be read at 5 p.m. on Monday, November 11. Mr. J. D. Wallis, member of Council, and Mr. Eustace Hills, barrister-at-law, respectively will open discussions on the first and second reports of the Acquisition of Land Sub-Committee of the Ministry of Reconstruction; Mr. J. W. Hurrell, Fellow, on "Building Contracts and the Functions of the Quantity Surveyor Before and After the War"; while papers are also being arranged on agricultural reconstruction and the development of the mineral resources of Great Britain during the war. The Institution was represented by Mr. F. H. A. Hardcastle on the deputation arranged by the Royal Institute of British Architects to the Ministry of Labour on the need for the early demobilisation of key-men in professions after the war. The Council of the Institution have again approached the Government with the object of impressing upon them the urgent need for early steps being taken to carry out the policy recommended by the Forestry Sub-Committee of the Ministry of Reconstruction; and particularly for securing the co-operation of landowners in planting new and replanting felled areas; in making provision for the supply of necessities such as seedlings, plants, wire, etc.; and in taking powers similar to those employed in connection with food production for keeping down rabbits and other pests.

Scottish Ecclesiological Society.—On the 12th inst. the Scottish Ecclesiological Society visited the Church of Corstorphine. The exterior of the church was first described by Mr. Thomas Ross, LL.D., architect, who recalled the vicissitudes through which it had passed since the days of King David I. It had been taken down, rebuilt, altered, and added to, and was at its lowest ebb architecturally when its last restoration was effected about twelve years ago. Dr. Ross then described the interior, and Mr. W. Traquair Dickson, W.S., gave a short sketch of the history of the church, and alluded to outstanding events in the story of the parish, such as its association with Prince Charlie on the occasion of his march to Edinburgh.

The Roman Catholics in Coventry are erecting, at a cost of £7,000, a new church as a memorial to those who have fallen in the war.

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October 30, 1918. Volume CXV.—No. 3330.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

New Buildings proposed to be erected at Westminster for the University of London.

Proposed Empire War Memorial Museum, Whitehall and Victoria Embankment. Proposed National War Memorial Chapel near Westminster Abbey. View of exterior, an interior and plan.

"Millbank House," next the new bridge at Vauxhall, and at the corner of entrance to "Empire Avenue," looking east.

General Block Plan of the area of London, including the sites of all these buildings. Major Charles J. C. Pawley, V.D., Architect.

Currente Calamo.

A beginning is being made with the rebuilding of Belgium, and engineers are already leaving for Ostend and other recaptured towns in order to arrange for the employment of Belgian artisans in such work as can be started at once. Naturally in present conditions things cannot be pushed very far, and military necessities must still rule as regards materials. But what can be done will be done at once, so that work on a grand scale can be undertaken as soon as we get back to something like normal conditions. Meanwhile, the Local Government Board is setting up a committee to arrange for the repatriation of the 150,000 Belgians now in this country. Many of them will be glad to find work amid their fellow-countrymen, and all, doubtless, will be welcomed by the friends and relations who, if not driven into exile, have for so long suffered at the hands of their brutal oppressors.

On Monday, November 18, a Fuel Economy Exhibition will be opened in Trafalgar Square, London, organised by Lady Rhondda's "Win the War" Committee. The object is to show people how to economise their coal and light rations by making use of the means to hand without having recourse to expensive patent appliances. No materials will be used which cannot easily be obtained in an ordinary household. The exhibition should be helpful. Perhaps, if Lady Rhondda could be induced to take the Fuel Controllership, things might be hurried up a bit, and those of us who are still waiting for Form 3 might get to know what our rations are to be, and so be able to set to work and economise. So far the people who have defied the regulations have decidedly the best of it, thanks to the complaisance of the coal-vendors, who, supplying coal at 2s. 4d. per cwt. in small lots, have, of course, had little left for the rest of us, even when, coal-less, we have been granted an interim order by the local fuel controllers! By the way, will someone organise a Paper Economy Exhibition with an explanatory demonstration of the saving effected by the Food Controller, by the restriction of the size of the little erratum slip, which it was found necessary to enclose with the new food tickets to correct the omission and the blunder in the supplementary instructions?

The Manchester City Council is to be asked to-day, at its final meeting for the current municipal year, to approve a resolution of the Art Gallery Committee reaffirming the opinion of the committee that "the old infirmary site is the best possible site for the new art gallery." Whether the resolution will be sidetracked by some ingenious partisan of the policy of doing nothing we do not know. It is time Manchester woke up to the fact that similar and too successful efforts in the past have not added to the reputation of the city, and that all its citizens who are not disposed any longer to tolerate the manœuvres of an obstructive faction took action along the only line likely to re-establish the credit of Cottonopolis.

Last week, at the Thatched House Hotel, Manchester, was offered for sale by public auction No. 5, New York Place, Marsden Street, Chorlton-on-Medlock, the birthplace of the Premier. The house was one of eighteen submitted for sale in one lot. The bidding started at £750, and quickly rose to £1,160, at which price the property was sold. Although the name of the purchaser was not disclosed, it is understood that the property was bought by one whose object is to preserve No. 5 for its historical interest. No increment duty will have to be paid by the vendor, we suppose, on the big profit accruing from the "historical associations"? Only builders are bled that way!

Builders and contractors having big jobs of pulling down and rebuilding often find it a hard matter to get rid of the debris and rubbish that must be removed. It is not always easy to find owners of land lying idle who will allow of dumping, even for fair payment, so a separate contract may have to be made by the builder with someone who will take away the stuff. Then this party gets to work on its removal, and soon finds that he is in the hands of his own carters. The recent interesting and instructive case of "Joseph Rank (Ltd.) v. Craig" shows what may happen nowadays owing to the very free-and-easy ways of workers in wartime, while it also emphasises a practical point of law. The defendant had contracted with various firms to remove their dust, ashes and rubbish. He employed carters, and gave them specific orders to take the stuff to Beckton and dump it on some waste land there. He also gave them tickets, for which he paid the owner of this ground 6d. each, to use with every load. These men, however, not caring to go so far, shot the rubbish on some open land belonging to the plaintiffs at Silvertown, which was a valuable building site awaiting development. Plaintiffs objected to this dumping, but the carters went on doing it, and said they should continue. The plaintiffs, as the only thing they could do, then brought an action for an injunction to restrain the defendant from shooting rubbish on their ground, without a shadow of legal right. The judge, after hearing the evidence, dismissed the action on the ground that as these carters had gone beyond the scope of their employment in throwing the stuff on plaintiffs' land the defendant was not liable. The Court of Appeal has now confirmed this ruling. In so doing they pointed out that, although an employer is legally liable for the negligence and the wrongful acts of his servants when done within the scope of their employment, yet he is not responsible for things they may do without, and more especially against, his orders. Here the men, to save time and trouble, shot the rubbish on plaintiffs' land, and, though it was hard on them, the Court could not hold the defendant responsible. Thus the only parties legally liable in damages would be the men themselves, so that here we have practically a wrong without a remedy.

The 171st exhibition of the Royal Society of Painters in Water-Colours is a fairly average one and numbers 239 contributions. One of the best things is "Eve" (19), by Mr. F. Cadogan Cowper, A.R.A. Another is Mr. J. C. Dollman's "Jungle" (107), with its group of elephants. Of his other three exhibits, "A Sussex Downs Roadway" (155) is perhaps the most attractive. Mr. Thomas Rooke sends an excellently-rendered interior of "Tewkesbury Abbey" (42), and another of the "South Transept of Westminster Abbey" (118); the former has been painted for the Birmingham City Museum. The President, Mr. Alfred Parsons, R.A., has six of his always welcome flower pieces, "Apple Blossom" (3)

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justly scoring first place. Mr. Robert Anning Bell, A.R.A., is best represented by his capital "Study of a Girl's Head" (44). Of the four sent by Mr. D. Y. Cameron, A.R.A., "Norham" (185) is possibly the best, but all are well up to his usual form. Mr. George Clausen, R.A., has a round dozen, "The Horned Moon" (4) fairly scoring precedence. Of Mr. S. J. Lamorna Birch's four, probably "The Lake" (16) will please most. Mr. Claude A. Shepperson sends a humorous rendering of "The Archæologists" (93), in which the mixed character of most of the good folk who attend these outings is happily hit off. His "Verge of the Sea" (10) is good. Among others worth mention are Mrs. Allingham's "Old Buildings near Didcot" (128); a delightful "Suffolk Landscape" (221), by Mr. James Paterson, R.S.A.; "Towards Assisi from Perugia" (106), by Mr. Henry S. Tuke, R.A., and "The Lonely Man" (24), by Mr. Henry Henshall. "A Memorial Panel of Works by the late C. Napier Hemy, R.A." (209-212) includes four of the deceased artist's best West Country works.

In a readable article in the *Japan Magazine*, Dr. L. Harada discusses transformation of the architecture of Japanese leading cities during the last few years, and whether the development is really scientific and what direction it is likely to take in the future. From the utilitarian point of view, Dr. Harada frankly admits that Japanese building is rather unstable and badly designed. At present, he declares, Japanese architecture is "in the melting pot," and its examples are either foreign or original native designs, the hybrids being few and unproductive. Though the Tokyo Station and the Bankers' Club are not true representatives of modern architecture in Japan, they have some special features which probably only a Japanese architect could have given them, thus distinguishing them from purely Western architecture. There are also numerous office buildings which cannot be regarded as mere imitations of Western architecture, such as the Shirokiya and the Matsuya and the Kaijo building, all in Tokyo, which show considerable progress in architectural art. The completion of the Grand Shrine in honour of the Emperor Meiji, Dr. Harada thinks, will doubtless mark a new era in the architectural art of Japan, and set a model for future generations in sacred edifices. The same may be said of the new buildings for the Imperial Diet as regards the style to be followed for public buildings. They are to cost 11,000,000 yen and be constructed of only native materials. It is worth noting that Japan, like ourselves, has a society for the preservation of ancient buildings, which was founded in 1896, which concerns itself chiefly with the care of the old temples and shrines.

An article in *Zeitschrift für Bauwesen*, 1918. Parts 7 to 9, by Prof. Buhle, of Dresden, describes and illustrates a number of the largest and newest of the German grain stores. The author describes the necessity for greatly increased storage capacity owing to the restricted imports of grain resulting from the war, alludes to the combined efforts of engineers and architects to design the most suitable structures, and then proceeds to describe in detail those which he considers of the greatest interest. The grain store of the Royal railway administration at Ludwigshafen, on the Rhine:—This store was recently built by G. Luther and Co., of Brunswick, to take the place of a store destroyed by fire. It has a capacity of 25,000 tons of grain, is 121 m. long, 27 m. broad, and 21 m. high to the eaves of the roof. It is divided by two cross walls, as security against fire, into a large range of floor storage on the south side, a silo-store in the centre, and a small range of floor storage on the north side. At the south end there is a cleaning plant capable of treating 10,000 kg. of grain per hour, consisting of two magnetic two-suction cleaners, six separating rollers, and eight seed eliminators. A silo-store of the Russian Bank at Sorotschinskaja, on the Tashkent Railway, was also built by Luther, of Brunswick, and is chiefly supplied by road wagons, but partly by rail; it is discharged in bulk into railway wagons. The area occupied is 25.6 m. by 38.4 m., by 18.3 m. high, and the capacity is 10,000 tons of grain. Unloading from railway wagons is effected by four tubes, two at each side, in which band conveyors carry the grain to the elevators. At the end of the building weighing apparatus is provided for dealing with grain delivered by road wagons. The "Warsaw Top" is a curious humming-top-shaped store, of which four, having a diameter of 22 m., were built between 1889 and 1891. They have been for years disused, but have recently been altered by Amme, Giesecke, and Konegen, of Brunswick, to cope with the wartime requirements. A silo-type store at Olsaat was built by Luther and Co., Brunswick, and provided with long transporters and elevators for unloading vessels lying some distance from the store. A considerable number of other grain stores are illustrated and described.

THE EMPIRE WAR MEMORIAL FOR WESTMINSTER.

[WITH ILLUSTRATIONS.]

The scope of the great war is so vast that any memorial scheme adequate thereto, however it may challenge criticism otherwise, can hardly do so by reason of its scale. Certainly the project to be discussed to-morrow at the meeting over which Lord Leverhulme will preside at Westminster cannot fail to arouse a widespread interest, and we are glad to know that it is supported by so representative an advisory committee, headed by the Marquis of Crewe. The distinguishing feature of the proposal comprises the creation of the "Empire Avenue," which, in comparison with previous metropolitan improvements of the kind, has one outstanding and unique advantage in its favour, in that its conception is based upon the idea of furnishing sites for a group of important definite buildings, whereas such undertakings as Northumberland Avenue, built forty odd years ago, or Aldwych and Kingsway, recently laid out, had to be lined as they actually are by independently designed façades brought into existence by chance occupation and the haphazard requirements of individual leaseholders. Those great streets can only be described as more or less heterogeneous medleys of varied premises of manifest mediocrity, emphasised here and there perhaps by notable exceptions. General conformity of effect worthy of the centre of the metropolis of the Empire is non-existent, grace of skyline, continuity of style and architectural distinction being subordinate to the prevalence of a materialistic complexity. When the London County Council inaugurated the Strand improvement scheme some attempt was made to cope with this problem, but owing to the absence of any possible determination as to the particular uses to which the buildings ultimately might be put, all the prize competition designs for the several frontages had to be abandoned.

The promoters of the present undertaking are fortunate in that they are enabled at the outset to show that their scheme is based upon the most desirable provision of an ample and worthy site for the much-needed new buildings intended to house the University of London. For all-sufficient reasons the Bloomsbury site at the rear of the British Museum and the Foundling Hospital site had to be abandoned, and no alternative scheme has found favour. During the present year Parliament has passed an important Education Bill for furthering elementary and secondary teaching of a far-reaching character, so that obviously it is now quite time that the contemplated erection of premises for the University of London should be proceeded with. After the present cataclysm we shall have to improve and extend our higher education. Only let us not lose grip upon the irreplaceable things of the old. What more worthy war memorial could be suggested than such a building as is now suggested?

The proposed site, as shown by the accompanying block plan, is that of the keystone of the present war memorial scheme, and will well accommodate the central buildings of the University of London. It has a frontage of over 900 ft. on the River Thames Embankment and a return façade of about 1,500 ft. The site embraces fifteen acres. No other such area in all London can do this so advantageously. We reproduce a view of the design which Major Charles J. C. Pawley has prepared to show how he proposes to realise the possibilities afforded by so splendid an opportunity. The "Empire Avenue" which he has planned is set out to a width of 120 ft., the sidewalks to be 15 ft. wide, leaving 90 ft. in the clear for the roadway, under which subways are proposed connected with underground provisions of the most up-to-date kind, including secondary subways for drainage, electric light, and other services.

The approach is from the Grosvenor Road Embankment, and the new bridge for Lambeth, already decided on by the London County Council, determined the particular position chosen for this new thoroughfare, which is to be about 4,000 ft. long, thus giving available frontages for buildings on both sides of some 6,000 ft., after allowing for the intervening openings of the contiguous streets leading therefrom. The idea is to utilise the adjacent sites for important scientific and art-institutions all overlooking this boulevard, which will be enriched, according to the present plan, by three circular spaces measuring 300 ft. in diameter, and so set out as to furnish sites for separate memorial trophies and monumental sculptures by British, French, Belgian, and Italian artists, and those of our own

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Dominions beyond the seas and America. One big centre piece has already been designed for "Mons Place" by Mr. Gilbert Baynes. Other sculptors, including Mr. Conrad Dressler, have made suitable compositions, and some of their models will accordingly be exhibited at the meeting in Caxton Hall to-morrow or shown on the lantern screen. We saw them last week at the Press view.

The "Empire Avenue" leads towards Victoria Station, and has outlets by way of Eccleston Street and Gillingham Street over Grosvenor Bridge into Buckingham Palace Road, while to the right an approach is formed opening into Victoria Street, facing Christ Church, and leading on to the Broadway and St. James's Park Station. The difficulty of obtaining a vista at the upper extremity of "Empire Avenue" is due seemingly to the proximity of several enormous blocks of "mansions" or residential flats hard by the Roman Catholic cathedral and the parish church in Ashley Gardens. The complexity of the streets at this point interferes with a more adequate outlet being adopted through what is now called Carlisle Place, though Major Pawley has shown a modified new through way alongside the Cathedral and utilising the Archbishop's house, land at present occupied by temporary war structures. This proposed vent is called "New Zealand Way," opening out of the circus where the trophy for France is proposed to be placed. We are informed that the London County Council has a scheme which is intended to deal with this part of Westminster, and consequently the defect of the plan here illustrated may perhaps be rectified, though the cost may prove prohibitive. Vauxhall Bridge Road is to be widened at points by alcove places for Italian and Serbian torphies, as well as by a circus devoted to America. Thenceforward Vauxhall Bridge Road is to be called "Columbia Way," a site being reserved to the east, next Vincent Square, for a group of "Empire Picture Galleries." The elevations of this structure form a series of the best designs submitted by Major Pawley. There are thirteen, including a "Hall of Nations," the site of which is not marked on the plan.

The position indicated for the Empire War Memorial Museum is between the War Office and New Scotland Yard, with a frontage to Whitehall and another reaching along the Victoria Embankment. We reproduce a view of the former façade which includes Inigo Jones's famous chapel, now used as the United Services' Museum. This elevational feature is repeated at the other extremity of Major Pawley's design next to Scotland Yard. The architect's endeavour has been rather effectively realised by adapting the scale and character of Ingo Jones's masterpiece to this scheme as a whole.

Our second double-page sheet is devoted to the illustration of the proposed memorial chapel or war shrine prepared by Major Pawley, for erection on the eastern side of Old Palace Yard facing southward to Great College Street, on land formerly occupied by old office buildings belonging to the Ecclesiastical Commissioners and demolished prior to the war. The plan given is so clear that it needs little description. The Maltese cruciform shape adopted unquestionably furnishes the maximum amount of space for monuments to be located in the seventy-eight recessed chapels. The out-to-out dimension on plan is 300 ft. "The shrine" proper is to be surrounded by a campo santo cloister, the dwarf proportions of which well emphasise the lofty proportions of the chapel itself. The ability displayed in this composition is unquestionable, but whether the scale adopted would not prove overwhelming in regard to the church, Chapter House, and cloisters of Westminster Abbey may possibly be a matter of difference of opinion. Various similar projects have from time to time been prepared, but the Abbey authorities have hitherto not favoured any similar schemes, and consequently one after another has been shelved. The war doubtless has modified preconceived ideas about many things, and, while it is of the first moment to preserve the Abbey and its environments from detrimental encroachments, it has become manifest that a suitable national building for the memorials of the illustrious dead must at no distant date be erected. No more appropriate position in so many respects for such could be found as the crowning gift of the nation than a site so near the first meeting-place of British democracy and the present Houses of Parliament and Westminster Hall, and contiguous to the sacred fane wherein the dust of the heroes and statesmen and other worthies of every epoch of the glorious past of Britain have found repose.

Our Illustrations.

EMPIRE WAR MEMORIAL BUILDINGS IN LONDON.

To-morrow Lord Leverhulme will preside at a meeting to be held in Caxton Hall to inaugurate the Empire War Memorial scheme designed to provide new buildings to be erected by the University of London on a fine open site facing the Thames (next the Tate Gallery for British Art), and having a long frontage towards the projected new thoroughfare entitled "Empire Avenue," starting opposite the new bridge to be built by the London County Council at Lambeth, and entered from Grosvenor Road "Empire Avenue" will lead to Victoria Street, and also give an improved approach towards Victoria Station. An "Empire War Memorial Chapel" is included in the undertaking, the suggested site being partly in Westminster Abbey precincts, facing Abingdon Street, and the Victoria Tower Gardens, with a prospect from the Thames. In Whitehall a "National War Museum" is intended, with Inigo Jones's chapel incorporated at the northern end, and this feature is repeated at the southern end, next to New Scotland Yard. This building to have a river front along the Victoria Embankment. The illustrations given to-day show a view of the proposed new University of London as seen from the Thames, with the end of new Lambeth Bridge introduced to the right of the picture. A view of the Whitehall facade of the "National War Museum" is reproduced on the same plate. The plan of the "Empire War Memorial Chapel" is given with an exterior perspective including part of the Abbey Church, also an interior view of this chapel. The block plan shows the area of S.W. London which comprises the positions for all these contemplated buildings. A further drawing shows "Millbank House," situate at the entrance to "Empire Avenue" and facing Lambeth Bridge. The Victoria Tower appears in this view. Major Charles J. C. Pawley, V.D., is the architect of all these buildings, which are drawn by Mr. Harold Oakley. A description appears on page 286.

The Salisbury Education Committee has decided to give notice of its intention to build a new school at Fisherton as soon as possible.

Correspondence.

PROPOSED FEDERATION OF ARCHITECTS, SURVEYORS, CONSTRUCTIONAL ENGINEERS, ETC. (PROFESSIONAL MEN INTERESTED IN THE BUILDING INDUSTRY), NOW ENGAGED TEMPORARILY IN GOVERNMENT OFFICES.

To the Editor of THE BUILDING NEWS.

Sir,—It is suggested that some scheme should be initiated whereby all architects, surveyors, constructional engineers, etc., *temporarily* engaged in Government offices could be united in one strong association.

The objects, *inter alia*, of such an association would be:—

(1) To uphold the status and promote the welfare of professional men *temporarily* engaged in Government offices, and to provide opportunities for association between them with a view to *united action* on all matters affecting their interests.

(2) To consider the conditions likely to affect members of the *temporary* professional staff on the conclusion of hostilities and particularly those relating to housing schemes and other national building work.

An association of this nature comprising over 150 architects and surveyors (*temporary*) exists in H.M. Office of Works.

It is suggested that a similar association might be formed in each Government Department where professional men are engaged *temporarily*, and all such associations be united in one federation.

Leading members on the Councils of the Royal Institute of British Architects and the Society of Architects have been (unofficially) approached, and have signified their approval of the scheme here outlined.

A provisional committee, consisting of Messrs. Alfred Cox (Fellow Royal Institute British Architects), H. V. Milnes Emerson (Associate British Architects), E. Ravenscroft (Licentiate British Architects), J. Teifion Williams (Member Society of Architects), H. A. Aitken, E. H. Brooks, D. Carmichael, has been formed to consider ways and means for putting this proposal into operation.

All professional men in Government Departments who are interested herein are invited to communicate with—Yours faithfully,

FRANCIS H. WITTS,
Hon. Organising Sec. (pro tem.),
C/o C. M. O. Scott, Esq.,
2, Dean's Yard, Westminster, S.W.1.

A memorial in St. Andrew's Parish Church, Wigan, has been erected to the memory of a living clergyman and his dead son, the living clergyman being the Rev. W. A. Wickham, now rector of Ampton, Bury St. Edmunds, and until recently, for the long period of thirty-eight years, vicar of St. Andrew's parish, Wigan. The window is illustrative of the "Te Deum," being in three sections, and surmounted by a circular light. The son, Lieutenant Bernard Williams Theodore Wickham, was killed in action at Ypres last year.

The Lord Mayor of Manchester (Sir Alexander Porter), when formally opening the annual exhibition of the Manchester Athenæum Graphic Club in the City Art Gallery, said every time he entered that gallery he had a feeling of shame at the housing of the exhibitions there. He had hoped that during his year of office something remedial would be done, and it might be done yet. At the next council meeting he hoped a step would be taken in the direction of wiping away for ever the disgrace which rested upon Manchester in this respect.

A curiously-marked stone, found in Wick Harbour, is pronounced by Dr Curle, of the National Museum of Antiquities, Edinburgh, to be a super-altar of close-grained sandstone, possibly of 15th century date. When inconvenient for a bishop to attend personally and consecrate an altar, a small portable altar such as this was consecrated, and sent to be sunk into the altar requiring consecration. Scotland has hitherto possessed only two super-altars of the kind. The relic has been retained for the National Museum, and a cast of the stone has been returned to the Wick Museum. The stone is about five inches square, with five Greek crosses cut upon it.

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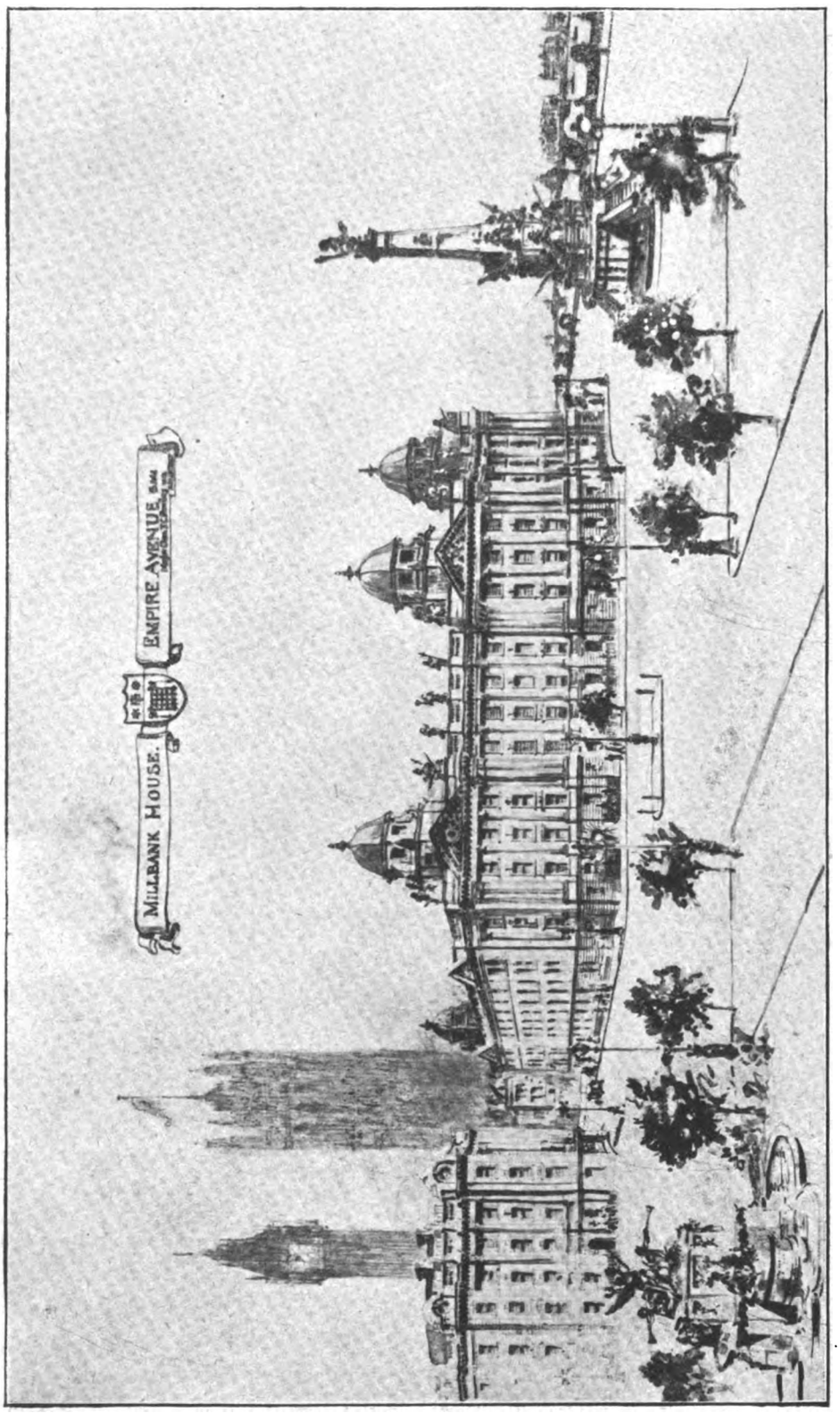

EMPIRE WAR MEMORIAL: ENTRANCE TO EMPIRE AVENUE FROM GROSVENOR ROAD.
Major CHARLES J. C. PAWLEY, V.D., Architect.

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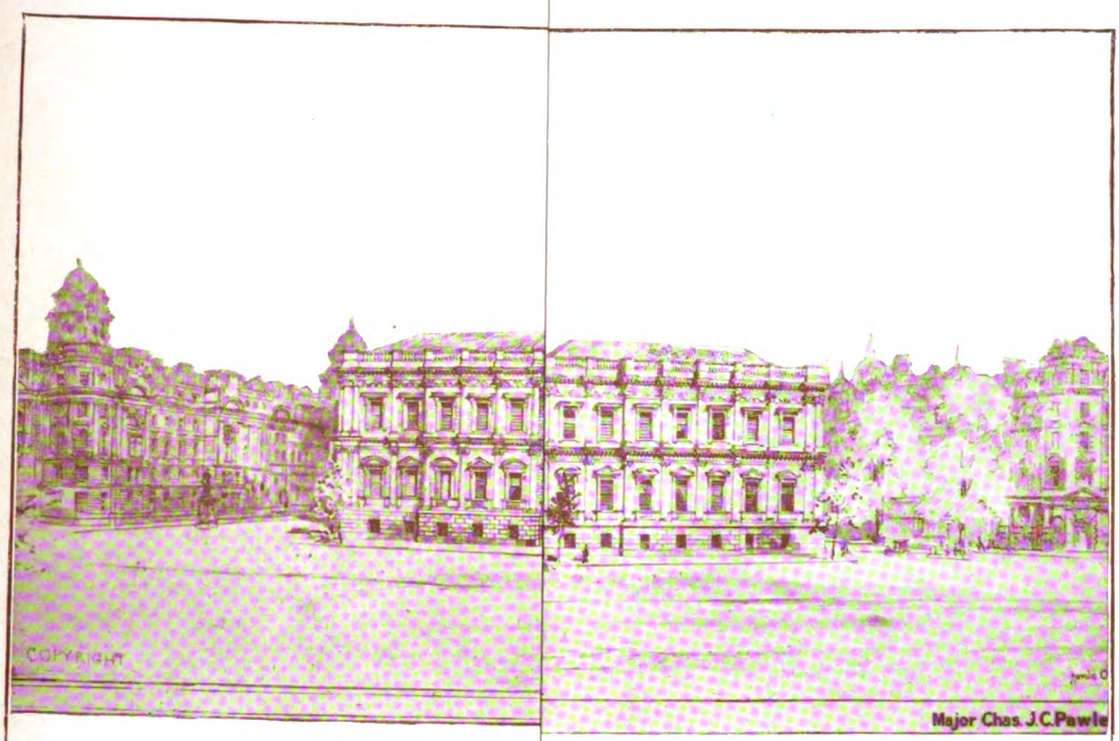

EMPIRE MUSEUM.

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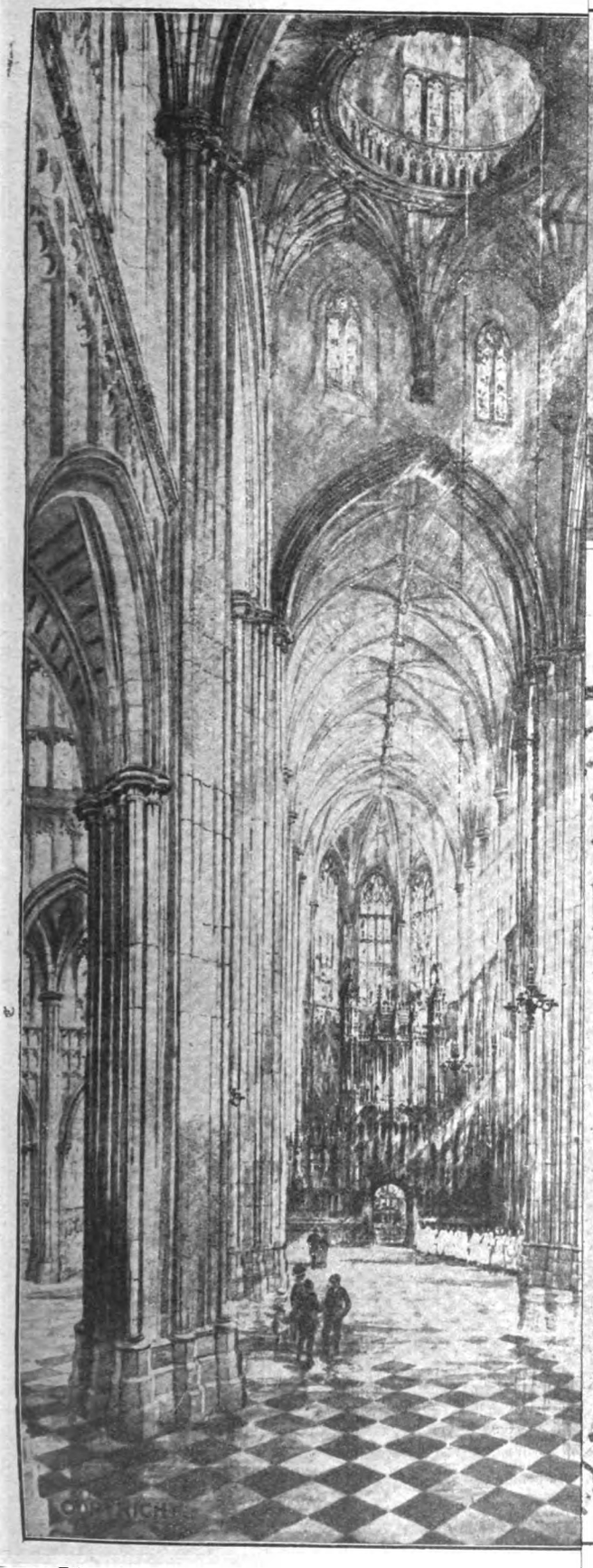

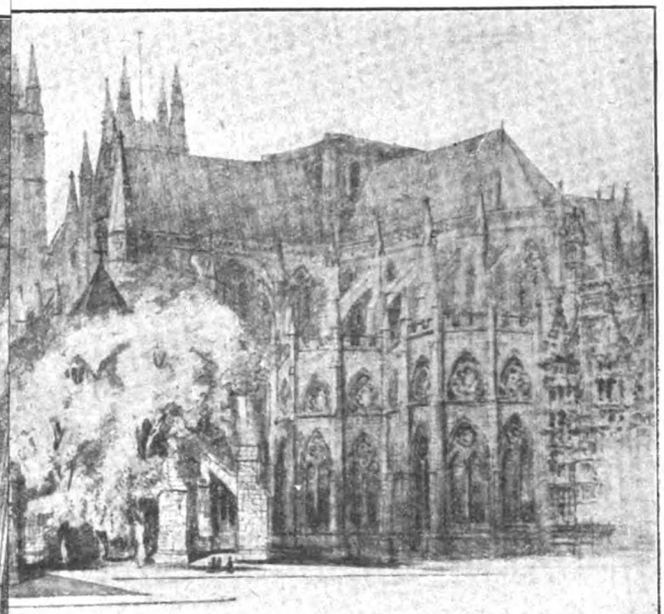

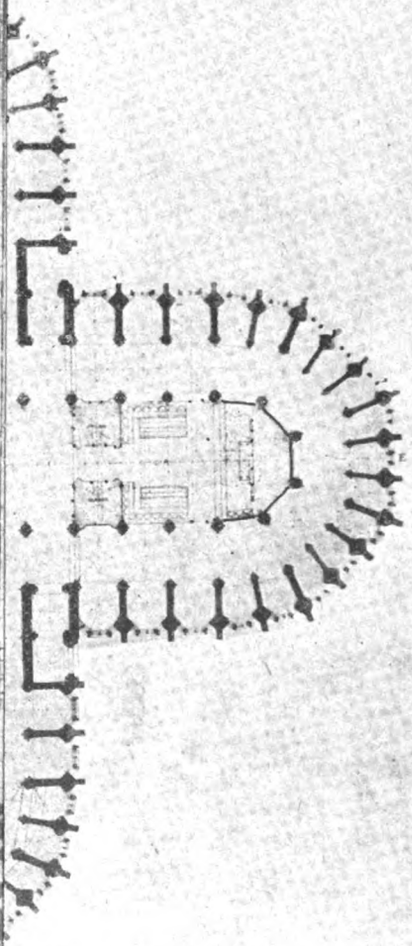

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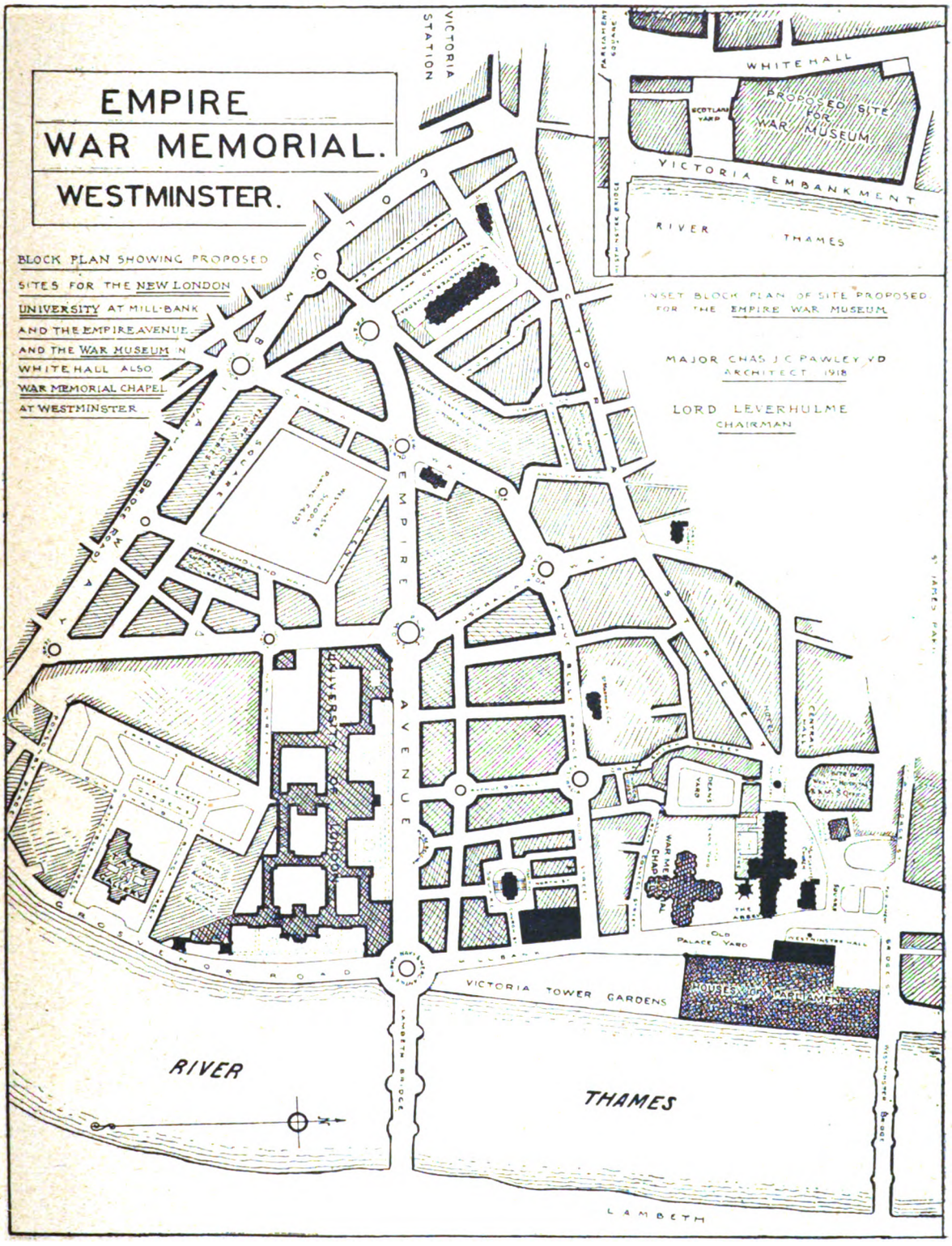

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INTERIOR AND EXTERIOR PAINTING UNDER WAR CONDITIONS.*

By J. Lawrance.

(*Continued from page 284.*)

Liquid Oil Drier—with oil and a little spirit, also usually a small quantity of resinous matter.

Powder Driers—with fine pigments such as zinc oxide.

The following notes indicate the merits of the different methods:—

Patent Driers.—In order that this drier can be added to dark colours as well as white, it is necessary that the reducing agents shall have little body or opacity; this, of course, reduces the opacity of the paint, and, unfortunately, the pigments that are generally used (as above) are often detrimental to the durability of the paint. Another drawback to patent drier is that it is not a standard article. It should be noted that in some cases there is a quantity of undissolved drying agent in suspension, and drying action is delayed until this dissolves in the added oil (when the paint is mixed up), when drying proceeds more rapidly. In consequence, an apparently slow drying paint often hardens rapidly afterwards, and even becomes too hard. From this it follows that paint mixed some time before use will generally give more uniform drying results. Patent drier often discolours on drying and carries this discolouration to the paint, proportional to the amount used.

Terebine.—The evaporation of such a large quantity of spirit, leaving behind chiefly resinous matter, is very apt to cause cracking by shrinkage and, therefore, this class of driers should be used sparingly. It is more suitable for paints for ironwork than for wood work.

Liquid Oil Driers.—It will be seen that the reducing agent here is the least detrimental because the evaporation of the small quantity of spirit is counterbalanced by the expansion of the oil, which is the chief extender; moreover, the oil possesses elasticity and protecting power. The drying action is very uniform, and the drier is standardised, inasmuch as manufacturers usually keep to one formula, and when a good make is obtained and used regularly, the painter can always depend on equal results. Liquid driers are particularly suitable for zinc paints.

Note.—Chemical combinations of the drying agents with resinous matter or oil are generally used in terebine and liquid driers, because they are more soluble in this form, but terebine usually contains added resinous matter also.

Powder Driers.—It is against good principles to add powder to paint, as absorption of oil by the pigment is likely to occur after the paint is applied, causing the paint to go flat. Drying is not uniform, as it is difficult to get perfect mixture without grinding.

Goldsize.—This is sometimes used as a drier, especially for flat paints, as it is a good binder. It is really a quick drying varnish. An excess of goldsize will cause cracking, especially if used over oily coats.

NOTES ON THE PRINCIPLES OF PAINTING

I.—PRIMING.

We have already considered the ingredients of paint, it is now necessary to investigate their uses in paint.

The functions of a priming paint vary according to the material undergoing treatment, but they may be broadly set out as follows:—

(1) On Absorbent Surfaces.—(Wood, plaster, etc.) To stop suction and fill up the pores of the surface with a tenacious material to which subsequent coats will adhere firmly.

(2) On Surfaces Liable to Corrosion.—(Iron, etc.) To form a coat which is practically impervious to the corroding agent (water or other fluids), and also, if possible, to prevent corrosion by neutralising the corrosive substances. In cases where little or no suction is likely to take place (on zinc, for instance), the paint must also be of an adhesive nature.

(3) On Non-Absorbent and Non-Corroding Materials.—(Glass, etc.) To form a foundation which will adhere firmly to the surface, the adhesiveness of the paint itself being depended upon for this purpose. Also to leave a ground to which subsequent coats will adhere.

(4) On Surfaces that have to Withstand Heat.—(Radiators, baths, etc.) To form a covering consistent with Clauses 2 and 3, but with materials that will not soften under the influence of heat.

A paint for any surface must present sufficient elasticity to enable it to expand and contract with the material to which it is applied.

It will be seen from the above notes that absorbent surfaces under normal conditions present the most satisfactory grounds for painting on, as the paint becomes dovetailed as it were into the surface, and is not entirely dependent on surface adhesion.

Generally, surfaces presenting great absorption should be primed with paint containing a large proportion of oil, because oil has good filling properties, moreover it may be rounder than for materials offering less suction. The latter should have turps or spirit added, and can be thinner to aid penetration. When the suction is not sufficient to allow the paint to enter the surface, treatment under heading 3 is preferable, i.e., the use of an adhesive paint. Paints which are depended on for secure attachment without the aid of suction, are usually based on a varnish or boiled oil vehicle, these being more adhesive than raw linseed oil. When a surface contains a substance that is soluble in spirit (e.g., rosin in wood), a portion of that spirit added to the paint will often give an extra hold.

The pigment in priming acts in several ways, viz. (1) as a filler, (2) combines with the vehicle to form an impervious layer, (3) acts as a colouring agent, thus assisting in the final obliteration of the surface, (4) in some cases assists in preventing corrosion by neutralising corroding agents.

The priming is the most important coat, as it is the foundation coat.

NOTES ON RE-PAINTING PREVIOUSLY PAINTED WORK.

Work should be first examined to ascertain whether the old paint will make a worthy foundation for the new.

(a) If the old work is badly cracked or blistered the paint should be removed. This can be accomplished in three ways. 1. Burning off. 2. Caustic paint remover. 3. Spirit paint remover.

(e) Whenever paint is removed it is advisable to use a greater proportion of turps in the priming coat than for new work of the same kind.

(f) Attempts to fill up badly cracked work with filling are not always satisfactory, as the cause of the cracking is not removed, and the cracks will often develop further after repainting.

(g) Attempts to scrape off blisters, fill up and re-paint, are rarely successful, as the new paint often causes the old (which has not properly adhered to the surface) to blister up in fresh places.

(h) Where work is sound or only slightly cracked on surface, it should be first washed and then rubbed down well with pumice stone and water.

(i) If work after preparation presents a tacky surface, a thin coat of flatting will render a perfectly hard ground.

(j) If knots show through the work, the paint should be scraped away *to the wood* in these places, the knots re-coated with patent knotting and the surface filled up level again. Knotting *over* the old paint is useless, as cracking is apt to occur wherever knotting is applied over paint.

(k) Painting should always precede stopping and holes should be well painted.

(l) Paint thinned with half oil and half turps would be suitable for average surfaces after preparation.

GENERAL RULES FOR THE SEQUENCE OF COATS IN PAINTING.

(1) A quick, hard drying paint or varnish (or knotting) should never be applied over a very oily one, because the hard film of paint is not sufficiently elastic to give to the movements of the oily undercoat (caused by the expansion and contraction of the latter). Oily coats over hard ones are not open to the same objection.

The priming coat over an absorbent surface need not be regarded as a very elastic one, as it enters the surface, which holds it firmly.

(2) Size should not be applied over oil paint, not only for reasons stated above, but also because size has a contractible tendency and cracks itself. Being strongly adhesive, it will also tear the undercoats apart to conform to its own movements. For this reason care should be taken when sizing walls or hanging paper not to allow any size or paste to become permanently attached to any of the painted work. Unless washed off again, it is likely to crack the painted work through to the wood.

(3) Paints containing an excess of terebine or gold size must be looked on as having contractile qualities, and may crack in themselves, but are certain to do so if applied over a very oily paint.

(4) One coat of paint should never be covered with another coat of paint or varnish until thoroughly hard, because the top coat will prevent further hardening of the undercoat, which will consequently remain too elastic for agreement with the final coat, hardened by its permanent contact with the air; cracking will result.

(5) Paint should be brushed out well and evenly to a thin film, otherwise the surface may become dry and exclude the air from the paint just under the dry film, with the result that the paint may become permanently tacky. This may occur in patches if the paint is not applied evenly.

(6) Each coat of paint should be lightly glass-papered to remove specks of dust, etc., before applying the next coat.

(7) The respective coats of paint should have an excess of oil and turps alternately (but not carried to extremes). This facilitates application, and the coats are made sufficiently equal in elasticity to prevent cracking (but see "Flatting" below).

Some painters employ the method of applying all the intermediate coats from one mixing, made from about half oil and half turps, but such coats are not so cohesive as the corresponding coats of the foregoing method, and the application is more difficult.

NOTES ON PAINT FINISHES.

Flatting.—The methods of preparing for and applying flatting do not appear to be consistent with the rule that hard coats should never be applied over oily ones, but when the following points are considered it will be seen that fresh principles are involved.

(a) The oily undercoat is applied on the day before flatting, and presents a tacky surface which will hold the minute particles of pigment contained in the flatting after the turps has evaporated.

(b) The flatting coat is made from pigment ground in turps, very little or no binding agent being added. It is also thinned with turps. As turps evaporates on exposure, it will be seen that the only portion of the paint left behind is the pigment which adheres to the tacky undercoat. Therefore, there is no film of paint to crack. If any movement of the oily undercoat occurs, the particles of pigment are free to go with it.

(c) The turps in the flatting has a softening action on the oil in the undercoat, and renders it more adhesive.

Glossy Oil Finish.—This must be well brushed out and should be mixed round enough to remain firm when spread, *i.e.*, it should not flow or run. If applied too heavily it is apt to dry too quickly on the surface, resulting in permanent tackiness or cracking.

Enamel Paint.—(a) For mixing enamel paints, pigments of strong staining power and high purity should be selected, and only sufficient added to varnish to obtain sufficient opacity.

Enamels and Varnishes.—These are obtained by the painter ready prepared. Cleanliness in all stages of preparation and application is necessary for good work. The varnish must be spread evenly and not too sparingly. It can be crossed to facilitate

* A paper read at the last meeting of the Society of Architects.

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spreading, but the work should be left to flow out as soon as possible Care must be taken to avoid dust and draughts.

Flat Enamels should be applied over a flat ground (unlike flatting paint). Each portion should be cut in cleanly, to prevent the brush going over partially dried enamel a second time (along edges, etc.), and causing flashing (glossy patches). Otherwise the application is much the same as for Glossy Enamel.

We can now examine the materials at present obtainable in order to ascertain how far they are capable of fulfilling their functions as paint ingredients. *Pigments*: Lead hydro-carbonate, lead sulphate, zinc oxide, zinc sulphide, chemical compounds of these or any of them, with reducers added, are the only white pigments that could be considered from a practical point of view, having regard to opacity and other characteristics necessary for white oil paints; and in view of the absence of lead and the shortage of zinc, the pigments that answer the necessary qualifications with the least expenditure of metal, will probably come to the front. The mere reduction of an essential pigment by a mechanical mixture of other materials is not real economy, as this necessitates more coats of paint being applied, thus destroying an apparent initial economy.

At the present time zinc pigments are much more readily obtained than lead, and it is quite possible to make highly satisfactory paints from zinc by proper selection and blending of the various forms of zinc pigments procurable. It should be noted, however, that while certain zinc sulphide pigments give excellent results on inside work if properly blended, they are quite unsuitable for exterior painting, and when specifying finishing coats for such work, architects would do well to state clearly that these paints must be free from zinc sulphide.

Many painters now realise the fact that zinc paints for interior use not only fulfil the necessary functions to the extent which gained so much favour to white lead, but in many respects surpass the older pigment, for, besides possessing the great advantage of being non-poisonous, they are more opaque, whiter, and cover a greater area.

Painters are less decided as regards zinc for outside use, although certain grades of this pigment have been used in America for years with perfect satisfaction, but this hesitation is due to the fact that many unfortunate experiences have occurred in the past, either owing to improper mixing, due to doubtful acquaintance with the materials, or from the wrong selection of zinc pigments. Experience with R.M. outside paints of more recent type does not go far enough at present for the house painter to express a definite opinion. These paints are being made on sound lines, however, and are in fact modified forms of the paints which have had such a wide application in America and elsewhere. The modifications referred to are of course due to the limitations of the use of linseed oil, to which I shall refer later, but the point I wish to make at the moment is that the use of a properly selected zinc pigment for outside painting has long passed the experimental stage, and the pigment cannot be looked on as a new material, and the main reason why it has not proved its merits in this country is that the preference for white lead (not always logical) has kept it at arm's length.

Also the cost of white lead always appeared to compare favourably with this class of zinc pigment, although a careful examination of the relative spreading capacities of the two pigments does not support this apparent comparison. For instance, Mr. Oliver gives the following comparison in the "Painter's Business Book": White lead oil paint: approximate area covered, 110 square yards per gallon. Zinc white oil paint, approximate area covered, 120 square yards per gallon.

Then again, the technique of paint-mixing entered into the question, and the adjustment necessary for zinc pigments as against lead pigments was not sufficiently understood. The present situation has caused a revival of interest in these comparisons, which will, I think, lead to a much better understanding of white paints and a more extensive use for zinc whites. The necessity for careful adjudication of white leadless pigments is an important consideration, as adulteration in this case is not ...ary to the Merchandise Acts, as is the case with genuine white lead, and it must be admitted that many questionable products are on the market. It is, therefore, incumbent on the architect to select a high-class standard of many years' reputation whenever he desires to specify for leadless white.

OILS.

Whilst linseed oil is difficult to obtain, and its high value perhaps never realised as much as it is now, the materials extracted from this oil for war purposes leave a balance of material which is obtainable in fair quantities and, with proper manipulation, can be used for white paints if mixed with other vegetable oils, which, though expensive, are not difficult to obtain. The product is a paint oil which acts similarly to linseed oil on exposure, i.e., it absorbs oxygen, thus changing physically into a tenacious film.

Many oil substitutes are offered on the market, but most of these are either made from mineral oils or from rosin and spirit, or from mixtures of these ingredients. The mineral oils are open to the objection that they do not absorb oxygen, and, therefore, do not dry, and no amount of driers will make them do so. When mixed with rosin, these oils appear to dry, but invariably re-soften, the oil sweating out from the rosin, leaving a sticky or greasy film, which it is impossible to paint over; moreover, they possess none of that tenacity and adhesiveness which are essential characteristics. Rosin and spirit is an equally unsatisfactory mixture; the spirit evaporates, leaving a film of rosin, possessing no elasticity, and, therefore, utterly incapable of imparting any durable quality in the paint. My experience is that unless an oil dries at least partially by oxidisation, its value in paint is very questionable as a durable binding agent. Rosin may enter into paint usefully in small quantities, but only as it occurs in highly manipulated varnishes made by experts, and not in the simple form we have been considering. Mineral oil should be entirely disallowed, even as a grinding medium for paste pigments. It can serve no useful purpose in the hands of the house painter, even though it is labelled "Paint Oil." Thinners, American turps, which is highly expensive and only procurable in small quantities, has given place to refined mineral spirits, which entirely fulfil their functions as thinners and penetratives. Here is a case where the wall of prejudice has been forcibly removed as far as the house painter is concerned. Engineers all over the country have used white spirit for years, and with every satisfaction when of a grease proof quality.

Having now indicated the main changes that have taken place as regards the paint manufacturer's ingredients, I should not be surprised if I were told that all this leaves the architect in somewhat of a dilemma as to how he shall specify the ingredients of paint. A little consideration of the facts will show that a great deal of difficulty would be overcome by specifying paint in ready mixed form. The main arguments leading to this conclusion are as follows:—

1. Many paint manufacturers have technical chemists who have been energetically engaged in countering the present difficulties, especially as regards oils: moreover, they possess the apparatus necessary for manipulating materials in a manner quite impossible in a painter's workshop.

2. The requirements of paints of all kinds are fully understood by manufacturers. Indeed, house painting materials are somewhat simple compared with some of the complicated requirements that the paint chemist has to contend with in other directions, such as dipping, spraying, and stoving paints.

3. Machine-made paints are mixed much more thoroughly, and are consistently uniform, a point which has considerable bearing on the durability of the product.

4. Paint manufacturers are in a much better position for securing the best raw materials because they buy in large quantities, and can keep the materials constantly under proper tests for quality.

I would also point out that the question of finding a substitute for linseed oil demands more particular attention where white paint is concerned, because, besides dealing with the general characteristics of the oil, its colour has to be taken into consideration. It is for this reason that specialists, in the making of white pigments, are in the best position to offer reliable white paints, and if the advisability of specifying R.M. paints is granted, the safest plan obviously is to take advantage of the time and care that have been bestowed on these materials by manufacturers who specialise in this direction. Seeing that the cost of labour is so much greater than the cost of paint, it is the quality of the paint that calls for first consideration, and the character of the present paint materials is such that no room is left for adulteration or rule of thumb methods of mixing.

The main argument that has been put forward against R.M. paint is that it is not possible to make standard paints in three grades that would be suitable for all purposes and conditions. To some extent this is a feasible argument, but most painters are quite capable of making adjustments for special purposes, by intermixing various grades of paint. For instance, the usual standard grades are, priming, flat undercoating, inside glossy and outside glossy, and from these there should be no difficulty in mixing, say, a semi-glossy by admixture of flat undercoating and inside glossy. In any case where difficulty presents itself it is only necessary to state requirements to the manufacturers.

The ingredients of obtainable paint mediums are necessarily in an experimental stage, and, therefore, cannot be guaranteed as to durability with certainty in every case. A very fair prophecy of the result can be deduced by comparatively short exposure tests however, and tests that I have made in this direction prove that an optimistic view may be taken respecting the durability of outside paints if properly made, and that interior paints can certainly be made quite satisfactory.

I think it will be clear from what I have said that the selection of materials for paints needs greater care than ever under present conditions, and this selection would at all events be bewildering to painters, and in many cases disastrous results would accrue if the matter were left in their hands.

There is another question which presents itself in dealing generally with the possibilities open to us for house painting at the present time. How far can coloured paints take the place of white? We must admit that white is certainly the base for most of the tints used for decorative purposes, and my experience with this aspect of the craft is sufficient to convince me that the displacement of white by coloured pigments is strictly limited. However, I submit that there are cases where considerable saving of white pigment could be made. For instance, it is usual to apply slate colour as a first coating for green paints. Now red oxide paints are quite effective for this purpose, and green paint looks particularly well when applied over red oxide, and often possesses a superior brilliance, although this fact does not appear to be generally realised. But even when slate and other medium tones are used it would be more economical and more reasonable to procure these paints in a ready mixed form than to make them from white paint and stainers, because the white base so used possesses an obliterating power in excess of requirements. The judicious intermixing of certain cheaper pigments, equally satisfactory as regards durability, is fully understood by manufacturers, and produces efficient paints without making such a heavy claim on the comparatively scarce white pigments.

A method of decorating which might be resorted to in some cases on new woodwork is that of staining and varnishing. Varnishes present little difficulty to the manufacturers, although formulæ have had to be revised, alternative oils and spirits taking the place of linseed oils and turps. The resulting varnishes appear to give satisfactory results, especially those intended for inside use, but a considerable increase in the cost is involved.

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Quick drying varnishes can be produced, comparatively low in cost, but these are apt to be brittle and less durable than those containing a higher percentage of oil.

Surfaces treated in the manner described are quite durable, and can be painted over subsequently if desired.

Having dispensed with the practical consideration, there is room for a few remarks on the commercial side of the question.

While it is true that white lead is practically unobtainable for house painting, there are considerable quantities of zinc pigments which can be obtained under license from the Spelter Controller, and paints made from pigments may be sold to painters in quantities of 1 cwt. at a time, and more in some cases if a special permit is obtained for necessary work in connection with the preservation of buildings and structures. Where a number of different jobs are concerned it is quite permissible to order this allowance for each job. I need not concern myself with the method of drawing the line between one job and another. The subtleties of this question are best left to the contractor. It is a problem possibly capable of possessing some elasticity. Coloured paints not containing lead or zinc do not come under the same regulations, and, therefore, can be supplied in bulk, providing that they do not contain linseed oil. The same remark applies to varnishes. Linseed oil is not allowed to be used for house painting, excepting in the case of small uncontrolled stocks; but, as already shown, efficient substitutes are in the hands of paint makers.

Summarising, I make the following suggestions :—

1. That white paints give the most effective results when purchased in ready-mixed form at any time, but more particularly so at the present time.

2. That these paints should be obtained from specialists in white pigment, in grades suitable to the work in hand, and according to specification, the usual grades being priming, flat undercoating, inside glossy and outside glossy, from which intermixture could be made for special purposes.

3. That clear distinctions should be made between paints for interior use and paints for exterior use, when ordering.

4. That zinc sulphide should be definitely prohibited in specification for outside paint.

5. That mineral oil and other non-oxidising oils should be prohibited in specifications for all classes of paint.

6. That where opportunity occurs for using coloured paints without offending artistic considerations, their use effects an economy.

7. When coloured paints are used, these should be specified in R.M. form, in order to effect economy in white pigments.

8. The method of sizing and varnishing on new woodwork is open to consideration.

This brings me to the conclusion of the main subject of my paper, but there is a broader aspect to the whole question that it is as well not to overlook. I have already pointed out that we have been brought back to first principles, and have to study the best means of painting afresh. This study accompanies a keen research respecting the suitability of certain materials for given purposes. The great value attaching to these facts, and the possibilities they open up for the future, need no demonstration. This is a supreme opportunity for architects to examine all specification phrases connected with painting, in order to ascertain whether they really fit in with the best technical methods. I have shown that certain prejudices held by painters have been swept away, I believe for ever, by war conditions. It is left for the architects to demolish the ghosts of these prejudices, if they exist, when preparing their specifications in the future. For instance, I feel confident that the progressive painter who finds that he can obtain the highest possible results on certain classes of work with zinc paints will not be tied to genuine white lead, for the architect will surely realise that, valuable as the latter material is, zinc is at least equal to it for some purposes, and in the opinion of many supersedes it. I merely cite this as one example, others may be found by the architect in the course of possible research.

On the assumption that reasons do exist for remodelling certain specifications dealing with painters' work, perhaps a few suggestions bearing on its accomplishment will not be out of place. I make these proposals without being acquainted with any work that the society may have already done in this direction, but in the hope that a view of the matter from the practical painter's angle may suggest some useful points.

My main suggestion is that specifications should leave room for alternatives by stipulating for materials of approved quality, and that this approval could either be given on the knowledge of previous experience of a particular article, or by a definite opinion formed in a manner which I here propose.

The activities of the architect's profession are so comprehensive and complex, that I imagine a tendency to specialise must exist, and, therefore, that the amount of technical knowledge regarding painters' materials claimed by the different members must vary considerably. If this be true, it would probably be advisable under an open specification to set up a kind of committee to which such materials could be submitted, and even in some cases to employ the services of a practical expert. It is worthy of note that some of the more recently founded Government departments (not tied by traditional methods) have adopted this plan of specifying, using the phrase "of approved quality," and realising that it is what a material will do that matters, rather than what it is composed of; and the method has been highly successful, leading, as it does, to competition of a healthy kind and prompting useful research on the part of manufacturers.

I submit further that a great deal of useful work might be done (especially at the present time) by a committee of this kind in the way of testing materials in a practical manner, especially as regards exposure tests, and I feel sure that any attempts made in this direction would receive the hearty support of manufacturers. Testing of paint is often done in a somewhat indifferent manner, although it is sufficiently sensitive to require reasonable treatment as a preface to reasonable results. On the other hand, it sometimes happens that test boards are executed in a nursery as it were and then exposed afterwards.

I would suggest the following points as essential, if fair results are to be obtained :—

(1) Surfaces should either be of new material, wood, plaster, cement, etc., similar to that for which the paint is recommended, or a previously painted surface of stability. In other words, any faults likely to arise from the ground on which the paint is spread should be eliminated as far as possible.

(2) All materials should be rendered clean previously to painting and free from damp.

(3) Paint should be spread out thinly, so that oxidisation of oils can take place in a thorough, even manner.

(4) Excess of heat in drying is not to be recommended.

(5) Exposure tests should be executed in the position that they are to occupy during the period of exposure, and in similar positions to those likely to occur in actual practice.

(6) Recommendations and instructions of manufacturers should be strictly adhered to. For instance, a paint recommended for ironwork, and perfectly suitable for the work, may give poor results if tested on a wood surface.

Again, if a paint is found too viscous for easy application it should be recorded as a fault against the paint; but a possible occurrence of a greater fault if the paint is thinned down (not according to instructions) could not fairly be so stigmatised.

(7) When tests are constantly washed for examination, it is advisable to leave, say, half the board untouched, as constant abrasion effects wear and tear of unusual character.

(8) Duplicate tests on different surfaces are desirable on grounds of doubtful character, as this often enables one to gauge the extent to which the characteristics of the ground contribute to the appearance and durability of the finish.

(9) For exterior exposure tests not less than four coats should be given, and the alternating system already mentioned in the previous part of this paper should be given due consideration.

(10) Exterior paints will not necessarily give good results if applied over unsuitable undercoats, but they should not be condemned on that account.

I realise that these hints on practical testing only touch the fringe of an extensive subject, but the suggestions made may be of some use; and even if the scheme proposed is beyond the scope of the society for any reasons that I have not been in a position to consider, then if the points given are of any assistance to individual members, the space given to them here will be justified. Further, I should always be pleased to go more deeply into this subject if this is desired.

TWO USEFUL HINTS.

Here's a foolish little kink which worked. When you mix a lot of concrete, you want to handle the water easily and without waste. So you connect the supply to flow into a barrel. Barrel is on the mixing platform, elevated, of course, to feed easily into the power mixer. Let the man whose duty it is to measure the water be stationed on the ground near the barrel, very near. That is important. Have the valve within reach of the man. Then measure in the barrel just the amount of water needed for each batch of concrete. Bore a hole in the side of the barrel at this level so determined, right over said man. Even though he is occupied in checking loads of stone, cement and sand, it is surprising how adept he soon becomes in gauging the time when the water is just about to spill —on him.

SCREENING GRAVEL.

On one job, the lay-out was such that we served local gravel direct into the charging end of a small gasoline driver mixer, from the railroad car. The mix was 1 : 4, as the gravel was an excellent grade, coarse and uniformly graded, and was dredged from a near-by river. At the same time, screened sand was required for mortar. The gravel was wet and hard to screen. There was considerable vibration from the mixer engine, and our foreman conceived the idea of attaching the mixer frame to the screen by a wooden strut, making a shaking screen. It kept two men "humping" to shovel gravel into the screen fast enough to feed the mixer loader and the mortar men. The quantity of screened sand was increased materially, with a reduction of the entire screening crew. It was a money saver and a speeder.—W. H. Scales, Danville, Ill.

PROFESSIONAL AND TRADE SOCIETIES.

Birmingham Archæological Society. — Mr. John Humphreys presided at the annual meeting of the Birmingham Archæological Society last Wednesday evening, and was re-elected President. A paper on "William Hamper, F.S.A., 1776-1831," was read by the Vice-President, Mr. Howard S. Pearson. Hamper, said the lecturer, was beyond comparison the ablest and most accomplished antiquary whom the city could boast. In all respects he was incomparably Hutton's superior. He had afforded help to Sir Walter Scott in the novelist's "Kenilworth." The family monument is in King's Norton churchyard, and, the family being extinct, is rapidly falling into decay. About £20 is needed for restoration purposes, and donations will be gladly received by the Hon. Secretary, Mr. Francis B. Andrews, care of the Archæological Society, Midland Institute, Birmingham.

The Royal Scottish Academy resolved some months ago to issue an appeal to members and exhibitors to contribute works of art which would be shown in the galleries and afterwards disposed of by public auction, the whole proceeds to be handed to the Scottish branch of the Red Cross. Nearly 200 pictures, works in sculpture, drawings, and etchings have been sent in by living artists. The collection will be on view in the great room of the Royal Scottish Academy from Monday, November 4, till Saturday, November 16, on which day the works will be sold in the gallery by auction.

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Our Office Table.

The Board of Education's Report on the Examinations in Art during 1918, which can be had for twopence through any bookseller or from either of the Government stationery offices in London, Manchester, Cardiff, Edinburgh, and Dublin, states that the number of candidates in 1918, apart from those in industrial design, was: In drawing 82, of whom 21 passed, one with distinction; in painting three, of whom none passed; and in pictorial design five, of whom three passed. The Industrial Design Examination, which is divided into two parts, namely, the preliminary qualifying tests and the two main tests constituting the examination proper, of the 29 candidates under (i), five passed, and four satisfied the examiners in the two preliminary qualifying tests only; of the twelve candidates under (ii), none satisfied the examiners; and of the seven candidates under (iii), none passed. In drawing, the quality of the work is pronounced quite up to and in some cases better than last year; in anatomy, much better; in perspective, slightly better, but nothing of outstanding excellence. The standard attained in the drawing of architectural elevations shows improvement, and there has been satisfactory work indicating study of building effects. On the other hand, in the drawing of the columns these effects have been neglected in many exercises, only diagrams being offered. In painting, the still life studies were remarkably good; those from the life not up to the level of former years, and in figure composition even below that of last year. In industrial design, results were generally a failure, as might have been expected.

An exhibit of American softwood timbers, which will be available for use in reconstruction work after the war, is now open for inspection by those interested at the Galleries of the Royal Institute of British Architects, No. 9, Conduit Street, Regent Street, W. This exhibit has been furnished by the Department of Commerce of the American Government, and is especially designed to explain the standard grades and sizes regularly produced by the American mills, and which may be had in the largest quantities and upon the most favourable basis of cost. The exhibit is open from 10 a.m. until 5 p.m.; Saturdays from 10 a.m. to 1 p.m. It is a most timely one, and architects and builders should not miss it.

The probability that the Channel Tunnel may be taken in hand at no distant date appears to have given encouragement to the advocates of two other submarine tunnels—one between Great Britain and Ireland and another between Gibraltar and the north coast of Africa. A more hopeful project which created some interest a few years ago, but which seems to have fallen out of sight, was for a tunnel beneath the Behring Straits. Such a tunnel would bring the whole of Canada and the United States into railway communication with Siberia and the European continent without going a mile over the seas. The Behring Straits tunnel would be about forty miles in length, but would run under islands in the centre, through which ventilating shafts might be driven. There seems to be no engineering difficulty in the way, and the advantages are so obvious that a renewal of the scheme may be looked for sooner or later.

A special committee was appointed by the Manchester City Council in March of last year with instructions to make an exhaustive investigation into the housing conditions of the city. The committee now reports that the Finance Act, 1910, has been an obstacle in the way of the erection of houses, reducing (it is estimated) the erection of dwelling-houses by from 33 1-3 per cent. to 50 per cent. Nearly nine years have passed since the Act came into force, and about 2,500 houses required annually in the city have not been built. The report adds:—"To-day there is scarcely a weekly house empty in Manchester, and it is common knowledge that sums of money are being offered for the keys of houses likely to become empty. It is difficult to give an accurate estimate, but the Sanitary Committee have calculated that 17,000 houses will be required."

The text has been issued of a Bill introduced in the House of Commons which is designed to give county councils further powers for the provision of housing for the working classes. The most important provision in the Bill, which applies only to England and Wales, is that which empowers the Local Government Board during the war and for 12 months afterwards to authorise a county council to provide houses for the working classes where a local authority within the county has not taken adequate steps under existing legislation to do so. Another section increases to 80 years the maximum period for the repayment of money borrowed by a county council to provide dwellings for persons employed by it.

The Bill was read a second time on Monday, after a funny speech by its introducer, Mr. Hayes Fisher, about "the small pills often successful in saving life," and the assurance that though "a little one" the measure was only "an instalment of the Government Programme." The criticism from all sides of the House was much more pertinent and generally hostile, Sir J. Boyton taking very legitimate occasion to insist that private enterprise properly encouraged was quite adequate to the occasion. The amendment moved by Mr. Rowntree in favour of its rejection was, however, rejected. By the time it gets through Committee—if it ever does—Mr. Hayes Fisher will have a few more "little pills" made up, and ready for the people who believe in quack remedies for all ills, rather than in the advantage of resorting to skilled advice.

At an inquest held by the City Coroner (Dr. Waldo) on October 14, in the City Coroner's Court, concerning the death of Arthur Nye, aged 14 years, an office boy, the jury, in returning a verdict of "Accidental death," due to falling through the door of a moving passenger lift, down the lift well to the basement, at Winchester House, E.C., added the following unanimous rider:—"We wish to add to our verdict a rider to the effect that, in our opinion, a door which can be opened by any person other than the lift attendant from within the lift never ought to exist. Further that every lift ought to have two doors, one attached to the structure of the building and the other attached to the car, both incapable of being opened except by the lift attendant. We are further of opinion that all lifts, before being used, should be passed by an effective Government authority, and should from time to time be inspected by that same authority." This is the second death—due to a defective lift door at Winchester House—on which Dr. Waldo has in recent years held an inquest. He has also, within the past few days, held three inquests on those dying as the result of defective lift gates in the City. At these three inquests the juries endorsed the suggestion made by the Coroner in his annual return for the year 1917, to the Corporation of the City of London (see p. 3), which reads as follows: "A majority of these lift deaths were caused by a fall through the lift well, and the remainder by crushing. Defects in the doors and in the mechanism of the lifts, coupled with their inefficient and careless use, mostly lead to these accidental and preventable deaths." As frequently pointed out by Dr. Waldo before, if such unnecessary loss of life and limb is to be curtailed or prevented, all lifts should be placed under compulsory regulation and periodical inspection by some responsible authority. As a first step, compulsory registration and examination of all lifts before use, followed by periodical inspection by the Board of Trade, is urgently needed.

The Aberystwyth Rural District Council have filled the vacant position of surveyor by appointing a candidate who is described as a carpenter. There were thirteen applicants for the position, including several discharged soldiers—the successful candidate belonged to the latter category—and the choice lay between carpenters, masons, plasterers, and three roadmen.

CHIPS.

The Liverpool Education Committee proposes to build a secondary school at North End for about 600 boys.

The Ossett T.C. General Purposes Committee has instructed the borough surveyor to prepare a scheme for erecting a national kitchen on the vacant land behind the town hall.

Mr. E. A. Sandford Fawcett, M.I.C.E. (Local Government Board), having been unable through ill-health to attend to his duties, has resigned the Secretaryship to the Ministry of National Service.

At the last meeting of the U.D.C. it was stated that the Cumberland County Education Committee had agreed to spend about £600 or £700 on the improvement of the National Schools in King Street, Aspatria.

The first meeting of the session of the Royal Institute of British Architects will be held Monday, November 4, at 5 p.m., when the President, Mr. Henry T. Hare, will deliver the opening address.

The governors of the British Hospital for Mental Disorders and Nervous Diseases, Camden Town, are making a special appeal for funds to provide improved and extended accommodation, for which approximately £5,000 is required.

The Gelligaer Council have appointed Mr. P. Jones Williams, Shipley, as architect and surveyor for their housing scheme at a salary of £400 per annum. The council contemplate erecting between 2,000 and 3,000 houses, and the scheme will probably cost about a quarter of a million.

Mr. William J. Locke, whose new book, "The Rough Road," is just published, resembles Mr. Thomas Hardy in this, that he was trained as an architect. For a time Mr. Locke was secretary of the Royal Institute of British Architects. He has now written twenty-one books of fiction.

Mr. Bonar Law, on October 22, in answer to Mr. Stewart, said a Select Committee of the House of Commons had been appointed to consider the internal facilities for transport in the United Kingdom, and the question of the construction of a tunnel to Ireland was covered by the terms of reference to that body.

Plans for the provision of a memorial to former Sandhurst cadets who have lost their lives in the war have now reached a sufficiently advanced stage for an appeal to be made for the funds required for the purpose. The memorial is to take the form of an enlargement of the chapel at the Royal Military College. It is estimated that £50,000 is required for the decoration of the interior, which is to form the memorial of tribute to former cadets.

The Education Committee of the London County Council, pending the completion of the rebuilding of the Haverstock Hill (St. Pancras, W.) graded school, finds it necessary to erect two temporary buildings on the site for the accommodation of the children. The present method of heating these buildings by gas stoves is found to be unsatisfactory, and it is proposed to substitute a system of heating by low-pressure hot water. A considerable saving in the cost of fuel and maintenance is anticipated by this alteration.

"The Triumph of the Innocents," by Holman Hunt, has been presented to the nation by its owner, Mr. J. T. Middlemore, M.P., and has been placed on view at Trafalgar Square in Room XXI. Holman Hunt painted two versions of this famous picture, of which Mr. Middlemore's is the larger. An early work by J. R. Spencer Stanhope, "Thoughts of the Past," has been presented by Mrs. Evans to the National Gallery, British Art, in memory of her husband, the late Judge William Evans. The picture shows a woman standing at the window of Rossetti's studio in Chatham Place, Blackfriars, and a view of the river.

The London County Council invited, from pupils at the Council's schools of arts and crafts and other persons in the Council's service, designs for a new certificate of commendation for members of the staff of the fire brigade. As a result, 29 designs were submitted, and the design submitted by Miss G. M. Chambers, a pupil of the London County Council Clapham School of Art, was selected as the most suitable. The design has been modified in certain respects at the suggestion of the Council's architect, Mr. W. E. Riley, F.R.I.B.A., and arrangements are being made for its reproduction. Lieut.-Col. C. B. Levita, M.V.O., offered the sum of £5 for the best design submitted, and this amount has been forwarded to Miss Chambers.

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THE BUILDING NEWS

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OUR ILLUSTRATIONS.

The Empire War Memorial, Westminster. General bird's-eye view of the area site, forming a triangle between Victoria Street and Vauxhall Bridge Road, and the river Thames skirting the Embankment of Grosvenor Road and passing the Houses of Parliament. The bisecting thoroughfare, called "Empire Avenue," extends from Lambeth new bridge to the Roman Catholic Cathedral in Ashley Gardens. The single page sheet shows the buildings which Major Charles J. C. Pawley, V.D., proposes to be placed on either side of "Empire Avenue" at its junction with Victoria Street.

Infant Consultations and Municipal Milk Depot, built at Bradford, Yorkshire. View, plans, and detail section. Mr. W. Williamson, Licentiate R.I.B.A., Architect.

Currente Calamo.

Viscount Peel's reply to Earl Grey on the Housing Question in the House of Lords was marked by more intelligence and a better disposition to give information than have characterised Mr. Hayes Fisher's endeavours in the same direction in the House of Commons, although we cannot but endorse Lord Burnham and Lord Salisbury's appeals to Viscount Peel to apply himself to the actual facts of the case and depend less on inspectors and controllers. Viscount Peel told the Peers that the number of local authorities who had now put before the Local Government Board definite building schemes in the terms of the circular of March last was 84 for 8,726 houses. These totals were made up as follows:—Boroughs, 26, for 4,325 houses; urban districts, 36, for 3,301 houses; rural districts, 22, for 1,100 houses. There were also 162 other schemes of local authorities before the Board. Most of these would no doubt ultimately be revised to comply with the terms of the circular. In addition some 350 local authorities who were acquiring land for the purpose of schemes were rapidly proceeding with the preparation of those schemes. Included in the number were Southampton, Brighton, Stockport, Portsmouth, Birmingham, Leeds, Bradford, Bristol, Rochdale, Swansea, and Plymouth. Replies had been received indicating a willingness to provide something like 240,000 houses. Allowing five persons to each house, they should provide for a very large portion of the population. One reason of the delay in these housing schemes was that the local authorities had thought they could get better terms from the Government. They had also been handicapped by the multifarious war duties which had been placed upon them. Another matter which had caused delay had been the waiting for the reports of the committees. The number of housing inspectors had been recently doubled. That is very likely, but doubling inspectors and controllers will not build the houses any more than it has increased or fairly distributed food or fuel!

We are glad Major Pawley's great scheme for the Empire Memorial School, which we illustrated in our last two issues, had so good a send-off at the meeting held in its favour last Thursday at Caxton Hall. Lord Leverhulme, who presided, announced that Major Pawley had offered the whole of the work and designs and drawings and his services as a gift to the nation. In commending the suggested scheme he asked why should we not continue on broad lines to make London, as it could easily be made, not only the finest city in the Empire but the finest city in the world. The possibilities of London were greater than ever were the possibilities of Athens, of Paris, or of any other European city. We had an opportunity in London of inspiring the whole nation with grand ideals, and we ought to seize it. Mr. R. C. R. Nevill, in a lantern lecture explanatory of the scheme, said that Major Pawley's general idea was to create in Westminster a centre and home for science, art, and learning, and to erect buildings dedicated to this great object upon sites which were not only from every point of view the most appropriate that could be found, but were also readily available. To carry out the idea wide avenues and streets would be laid out, and great circuses opened up. In these avenues and open spaces memorial groups or monuments dedicated to the achievements of our fighting forces and those of the Dominions might be erected. The rebuilding of Lambeth Bridge was also contemplated, designed as a memorial bridge and as an approach to the new city from the Surrey side of the river. One of the great features of the scheme was that it offered a unique opportunity for erecting new buildings so urgently needed for the University of London. That alone should render its early adoption certain, but there are a dozen subsidiary recommendations in its favour which can hardly fail to enlist the support of every citizen of the Empire.

The second deputation of the Committee on War Damage on October 28 got very niggling replies from Mr. Wardle, the Parliamentary Secretary to the Board of Trade, and electors concerned will not fail to remember it when the General Election comes. The deputation, which included the chief magistrates of a number of towns in all parts of the country, and represented no fewer than 842 municipal authorities, having a population of 32 millions, or 298 more municipalities than joined in the original presentation of the memorial to the Prime Minister, certainly deserved a better reception, and Mr. Wardle well deserved the comments of the Mayor of Great Yarmouth. The losses to property owners and traders have been immense, as may be judged from the figures given by Sir Robert H. Rogers, who had ascertained from the Statistical Officers of the City of London that by one raid alone, that of September 8, 1915, the City lost rates on no less than £250,000. What that meant—not merely to the direct losers of property, but to thousands more or less directly concerned—can be well imagined, but perhaps never exactly ascertained. Mr. Wardle wants "figures" which he can never possibly have. The Committee is doing its best to give the date of each attack, the number of victims, and estimates of cost of making good, and if the Prime Minister is going to wriggle away from the fulfilment of the hopes he held out to the first deputation he may rely on it that it will not be forgotten!

The long tangle in which Manchester has been involved for fifteen years with regard to the use of the site of the old Royal Infirmary seems to have been unravelled by the resolution passed by the City Council last Wednesday, though one cannot forget that a former decision of the Council was delusive in its "finality." The field, however, this time has been cleared for the adoption of the Council's original intention, and the withdrawal of the Libraries Committee's claims narrowed the proposal down to the building of an art gallery on the site. To this scheme the Council gave its sanction on Wednesday. This decision, of course, has the effect of rendering useless the plans for a joint public library and art gallery which were obtained by the Corporation in 1911 as a result of a competition among architects. The Special Infirmary Site Committee is now instructed to obtain competitive plans for the erection of an art gallery only. No action will be taken until after the annual reconstitution of the committees, which takes place this month. Let us hope fairness to the architects who may take part in the competition will prevail, and that no further attempts will be made, as in the past, to hinder the restoration of Manchester's credit and the provision of a worthy home for the art treasures in her possession and

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others which her generous citizens are waiting to endow her with.

The latest instance of such munificence is Sir Thomas Beecham's princely offer to build a new opera house on condition that the City Council shall provide a suitable site. So since it is now decided that the Piccadilly site shall be used for an art gallery only, the council is called on to provide two sites—one for the reference library and another for the opera house—or to find one site large enough to accommodate both. There are several sites in the city which are said to answer the requirements of a modern opera house alone. There are one or two which offer sufficient space for both a library and an opera house. But there is another problem, as the *Manchester Guardian* points out, connected with the administration of the city which cannot much longer be left unsolved. The Town Hall is already much too small for the government of Manchester. It has been proposed that the Town Hall annexe or extension, the opera house, and the library might be collected on one site, and if that proposal should be approved the site would have to be the one now covered by the block of property next to the Town Hall on the Lloyd Street side. Some of the Corporation overflow offices are already in this block. By this scheme the library might be placed in Mount Street opposite the Friends' Meeting House, and the main entrance of the opera house might face either St. Peter's Square or the Midland Hotel. Whatever is done, let it be fairly and exhaustively considered before a start is made, and Manchester, in the coming years, will deserve the congratulations of all who recognise her leading position as one of the great cities of the realm, rendered more assured than ever by the dignity which Art alone can give, adequately fostered by well-earned wealth and the right use thereof for the common advantage.

The approaching completion of the new Union Station at Toronto will mark a Canadian record of good work in every department, and a combination of steel and stone as successful in every way as has ever been achieved. The work was begun on November 15 by a series of boring operations through the Lorraine formation which forms the bedrock under the city of Toronto and its suburbs, a formation that, with proper footings, will carry any weight of superstructeure that it is desired to place upon it. The steelwork is of an interesting type. The exterior stone columns located at the main entrance of the station are formed of the largest stones ever turned in Canada. The columns are 5 ft. in diameter and are 32 ft. high, exclusive of capital and base. Each one is constructed of three superimposed sections, each of which is formed of a stone weighing about 30 tons in the rough and between 18 and 19 tons finished. A special plant was constructed at Sarnia, Ontario, to handle this work. The structural steel contract was carried out by the Canadian Bridge Company, and amounted to a total of about 5,900 tons. Each wing required about 1,700 tons of steel. When one realises that the centre span of the Quebec bridge contains about 5,500 tons of steel, it may, perhaps, be easier to realise just how much 5,900 tons of steel is. The building is equipped with the most modern system of fire alarms obtainable, and it will be impossible for a fire to break out in any part of the building without being instantly detected. No expense has been spared in the slightest detail to make the new station an outstanding example of the art of the architect and the craft of the builder. The plans and specifications were prepared by the Toronto Terminal Architects, of Montreal, an association formed by the firms of Ross and Macdonald and Hugh G. Jones. Mr. John M. Lyle is the Toronto associate. The general contractors are P. Lyall and Sons, of Montreal and Toronto. The engineering features of the work throughout have been in charge of Mr. J. R. Ambrose, chief engineer, Toronto Terminals Company.

The Chairman of the Building Materials Supply Committee under the Ministry of Reconstruction recently heard statements in Edinburgh by Mr. William Kelly, architect, Aberdeen; Mr. T. F. Maclennan, A.R.I.B.A., Edinburgh, and Mr. J. M. Dick Peddie, architect, Edinburgh—appointed by the Institute of Scottish Architects. The representatives considered that the supply of materials, and possibly of labour, during the transition period would fall short of the requirements, and that priority would have to be accorded for a time to constructional work and building operations. Preference might be necessary for a time for the extension or erection of schools and other educational institutions, and for public buildings essential for the general welfare of the community. Further claims should be dealt with alike, but they suggested that claims for expenditure on war memorials (even to those not of direct utility) should receive special consideration. In dealing with claims for priority, Government control was essential, but such control should come to an end as soon as possible, and the control should be decentralised. For Scotland there should be a department armed with wide powers and responsibility, subject only to the guidance of the central authority. To provide for increased production of the necessary building materials, those who were formerly engaged in the production of building materials should as soon as possible be returned to civil life. Some proportion of the shipping available after the war should be set aside for wood carrying. Plans and other arrangements for building must be in readiness beforehand. To that end architects, draughtsmen, and surveyors should be among the first to be returned to civil life when military requirements permit. In their opinion the present excessively high cost of building is due not only to the high prices of materials but to the unduly high rates of wages. They recognised that the increase in the cost of living and the smaller purchasing power of money together warranted large advances on pre-war rates, but the standard had risen out of proportion to these causes. They believe it to be in the interests of the country that Government control of materials and labour should cease at the earliest moment after national interests no longer demand such support, and that the cost of building will continue to be artificially higher than it should be as long as there is interference with the free distribution of building materials and with the conditions of employment.—That is so, and in everything else that is "controlled" it will be found more or less the same till the nation insists on the withdrawal of "control," which has been for the most part a series of experiments on the patience of the public.

All who knew him will regret our loss of the late Charles Edward Bates Kibblewhite, a Director of the Strand Newspaper Co., Limited, and for nearly thirty-four years a member of the staff of this journal. The eldest son of its editor, he was born on August 24, 1869, and educated at the Lower School of John Lyon, Harrow. In his sixteenth year he came to occupy a junior position in our offices, and rose by steady steps and constant application to the position held at the time of his death, which occurred last Wednesday evening at his residence, 22a, King Street, Covent Garden, after a short but sharp attack of influenza, followed by pneumonia and cardiac failure. He was at the office on the preceding Saturday afternoon till closing time, caught a chill later, and at once took to his bed, hoping to shake off what he thought was an attack of asthma, to which he had been for some years subject, but early last week his symptoms became alarming, and he passed peacefully away on the 30th ult. His remains were cremated at Golders Green on Saturday last, many of his Masonic brethren and other friends attending.

MR. H. T. HARE'S ADDRESS AT THE R.I.B.A.

We congratulate Mr. Hare that his first Presidential Address is the first of any similar utterance in which it has been possible for any speaker voicing the aspirations of the great professional bodies to congratulate his fellows on the prospective end of the long struggle which has convulsed the civilised world for more than four years, and exacted such sacrifices of blood and treasure from the best and bravest of our race—sacrifices which it is some consolation to remember have nowhere been made more loyally and unflinchingly than by the members of our own profession, or by those of every craft and industry of which they are the guiding spirits. That every man of us will do his utmost presently to perpetuate the memory of the noble slain and to emphasise the welcome home of those who have been spared to fight through to victory is our first obligation. That Mr. Hare will not vacate the chair without worthily doing his utmost to fulfil both obligations we are as sure as that every member of the Institute will render him the fullest support.

But the next duty of one and all of us is assuredly to facilitate the return to their peaceful occupations as speedily as possible, and to insist that the restric-

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tions which, as Mr. Hare truly enough says, have laid upon us a burden which no other members of the community have shared, shall be renewed "no longer than is vitally necessary," as Mr. Hare phrases it. We want no more "control," of the sort we have had, after peace is signed. We have our doubts whether the resolutions to that effect which have been conveyed to the Government have been taken as seriously as they were passed. Hitherto it is but too true that architects have not taken their proper share in public affairs in regard to many matters about which they are best qualified to speak, and their silence about which has induced the public, naturally, to believe that men who individually and corporately neglected the obvious duty of every citizen had little chance of inspiring confidence in their professional ability. More than ever it is the duty of every architect to secure the representation in Parliament and on the local governing bodies of the most suitable available member of his calling, and to take care, in the absence of such, that no vote he can influence shall be recorded in favour of any candidate indifferent or hostile to the building projects or the amenities of his town or district. We are glad Mr. Hare concluded by paying a fitting tribute to Mr. Sheriff Banister Fletcher, who, in addition to his many activities, has never lost a chance of championing the rights of architecture and architects in the City of London, and who may be safely trusted to render more good service of the sort.

Concurrently, our next concern should be to organise and unify the profession itself. In spite of such action as the R.I.B.A. and other bodies have taken, a large number of architects have hitherto held themselves aloof from the only existing means of qualification to the satisfaction of the public. If they do so much longer the sequel in all probability will be compulsion by the State of a kind in the framing of which they will have little part, and through the meshes of which the unqualified will slip as easily as he does to-day, to the damage of the public and the discredit of his calling. Let us hope, at any rate, that the answers to the inquiries now being made into the status of the architect may result soon in such action as may tend to real reorganisation and unification, and that they may not be frustrated at the last moment by recalcitrants who brought to naught the efforts of Mr. Leonard Stokes and those who worked with him with the best of intentions and no mean prospect of success.

THE ROYAL SOCIETY OF BRITISH ARTISTS.

Its own home having been commandeered at the last moment by the Government, the Royal Society of British Artists is indebted to the Royal Academy for the facilities for its third jubilee exhibition, and advantage has been taken thereof to gather together a display which is in every way an excellent one, and will well repay a visit by many who in previous years have not found their way to Suffolk Street.

Mr. J. Solomon Solomon, R.A., the new President, is well represented by his "Psyche" (48) and a "Portrait Study" (443). Mr. Harold Burke, the Vice-President, shows the "Inner Harbour, Honfleur" (232), "Olives" (274), and "The Monarch of the Game" (286). Mr. Hely Smith, the Hon. Treasurer, has five exhibits, all good: "Roll On, Thou Dark and Deep Blue Ocean" (28), a posthumous portrait of "The Late Capt. Geo. Hely Hutchinson Almond, R.A.M.C." (31), another of Edmund Hely, "Templeman Morse" (65), "A Rising Sea" (94), "Summer Breezes" (98), and "A Nor'-Wester" (170). Mr. Cyril Roberts, the Secretary, contributes seven, including a portrait of "The Right Hon. the Earl of Kintoul" (127), "The Brook" (130), a posthumous portrait of "Lt.-Col. F. T. Bowker" (205), "A Chill Evening on the Waveney" (309), "The Tapestry Room" (319), and a portrait of Mr. Charles Ince, R.B.A. (340). Mr. Charles Ince, the auditor, himself sends six: "A Bathers' Pool" (45), "Obsolete" (210), "An Old Thatched Mill on a Hill" (214), "The Valley of the Arun, Sussex" (230), "The Bridge and Houses, Barnard Castle, Yorks" (236), and "Autumn" (317). Mr. Robert Morley, the other auditor, has five: "Autumn 'Midst the Birches" (55), "Riverside Meadows" (121), "Bath Abbey" (269), "Bath" (301), and "Home on Leave" (436).

Mr. W. E. Riley, F.R.I.B.A., is best represented, perhaps, by his "Sunset on the Rocks" and a capital "Rough Day at Tilly Whim" (178). In effective but another mood he gives "The Morning Stroll" (273), "Purbeck Marble" (292), and "A Brilliant Day" (307). Miss L. Hogarth scores first place with her "At Work" (1), and her other five subjects are replete with good work. Mr. Frank H. Swinstead, of the Hornsey School of Art, is deservedly to the fore with "Homewards" (2) and his pretty "Peggy's Cottage" (129). Mr. J. W. Schofield's "The Shadowed Road" (4) is very good, and so is Mr. Cyril S. Spackman's "Crickhowell Bridge, Breconshire" (3). Mr. John Muirhead is most prominent with a fine "Avenue with Rustic Trees" (5); his "Buttercup Lane, Wyton" (9) is also excellent. Of Mr. A. H. Elphinstone's four, "The Bay" (13) is perhaps the most attractive, but "The Headland" (96) will well share its credit. Mr. Frederick W. Footett scores decidedly with "Twilight" (19), and not less so with "The White Wave" (119). Mr. John Lochead compels admiration of his "By the Ferry (Summertime)" (120), and in less degree with his "Cromwellian Cottage" (125).

More or less architectural in character are an "Interior in Urk, Holland" (10), by Mr. H. John Pearson; "A Bit of Old Paris" (43), by Mr. H. Charles Clifford; "St. Paul's from Bankside" (161), "The Saxon Church at Wareham" (153), by Mr. W. H. Allen; "Carnarvon Castle" (280), by Mr. Stuart Lloyd; "King's College, Cambridge," by Mr. W. T. M. Hawksworth; "The Crypt, Wells Cathedral," by Mr. Walter S. S. Tyrrwhitt (312); "The Cathedral" (Laon) (331), by Miss E. A. Hope, and "The Old Ashmolean Building, Oxford" (375).

There are only two pieces of sculpture, both by Mr. Paul R. Montford, "A Scotch South African" (445) and "The Rejected" (446).

COMPETITIONS.

London Lock Hospital New Buildings and Extensions.—Six architect experts in hospital design were invited to submit drawings for rebuilding the Lock Hospital in Harrow Road, incorporating part of the present premises so far as suitable. Mr. H. Percy Adams, F.R.I.B.A., acted as assessor. Three plans were sent in, their authors being Messrs. E. T. Hall and Son, Mr. A. Saxon Snell, and Messrs. H. V. Ashley and Winton Newman. The author of the selected design is Mr. A. Saxon Snell, F.R.I.B.A., 9, Bentinck Street, W.

REINFORCED CONCRETE CONSTRUCTION FOR SMALL DWELLINGS.

The author, Dr. Werner Scheibe, the Government architect, of Klotzsche, near Dresden, introduces the subject by certain remarks about the necessity for the provision of suitable houses for the families of the small peasant farmer class and the importance of preventing decrease in the birthrate by affording increased comfort to this class of the population. After alluding to the intentions of the Government with regard to improved housing and settlement on the land, he concludes that the crux of the whole question is the cost of house building. The prices of labour and all building materials have risen to such an extent that it has become almost impossible to build houses at a price which can be let at a remunerative rent.

In view of these conditions it is essential to examine any new systems of construction which appear promising. In this respect he has been very favourably impressed by the "Kilp" system, which is well illustrated in the journal. The unit building block is 210 mm. long by 70 mm. in cross section, and of such a length that it can be carried by two men. It is reinforced by four thin rods wired together at intervals. One edge has a semi-circular groove and the other a rounded projection, while one flat side has two projecting ribs and one groove to correspond with two grooves and one rib upon the other face.

The piers of the building are constructed of such blocks placed vertically; three, for example, being bolted together, while the spaces between the piers are formed by the same type of blocks laid horizontally, with an air space of 10 cm. between the inside and outside skin. Where window openings are required a standard slab is inserted in the air space. The floor joists, partitions, and roof are constructed of similar standard slabs, and it is stated that spans up to 6 m. wide can be adopted. The construction is so simple that unskilled labour and women can be employed under the direction of one skilled man. As soon as the plastering and fixing of windows and doors is completed the houses are ready for occupation. The cost per square metre of wall surface, inclusive of floor joist erection, is stated to be Mk.12-15 (say 1.1 to 1.4 shillings per square foot of surface). The cost per cubic metre of the finished house is about Mk.25-30 (say 8-4 to 10d. per cubic foot). The cost of a house of which an illustration is given was £275 to £300. This house is 4.25 m. wide by 5.75 m. front to back inside, forming one of a row, with cellars 2 m. and ground and first floor 3 m. high in the clear; the roof is of the ridge type, for use as a store. The accommodation is a kitchen-living-room and scullery on the ground floor, and two bedrooms on the first floor, in one of which are shown two full-size beds and in the other two full-size beds and a cot. The author states that such a house can be built in one to one and a-half days of actual time if a row of houses are being constructed at the same time. He is of opinion that this is a very promising system of construction, and work is already in progress by the Small Dwellings Co. of Bamberg. (*Deutsche Bauzeitung*, August 17, 1918.)

To help solve the pressing housing question, an exhibition of economical building materials is being held in the Exhibition Hall of the Zoological Gardens in Berlin from November 2 till December 8. Besides plans and drawings, there will be several actual buildings constructed of materials exhibited.

We hear that an imposing fifteenth century building—St. Nicholas' Chapel, King's Lynn—has been seriously affected with dry-rot in the wood flooring of the nave. It became necessary for the floor to be entirely taken out and replaced at a total cost of about £500, for there was danger that the remarkable roof carvings might become infected with the floating spores. The authorities have taken precaution against a recurrence of the trouble, which was caused by rising dampness, by waterproofing the concrete under the new wood paving blocks with the powder "Pudlo"—a product manufactured in this old-world town.

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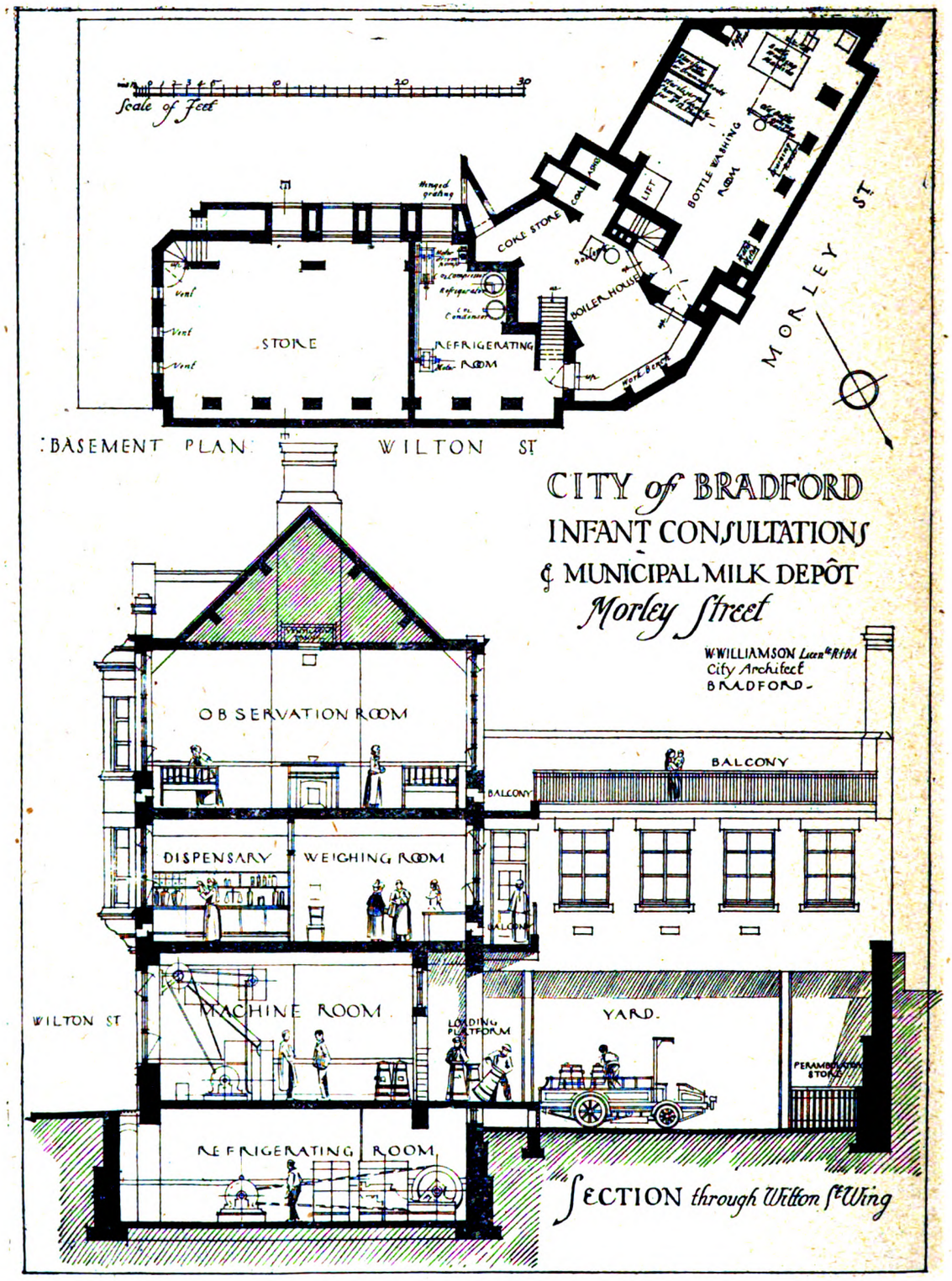

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CITY OF BRADFORD INFANT CONSULTATIONS AND MUNICIPAL MILK DEPOT, MORLEY STREET.

Mr. W. Williamson, Licentiate R.I.B.A., City Architect.

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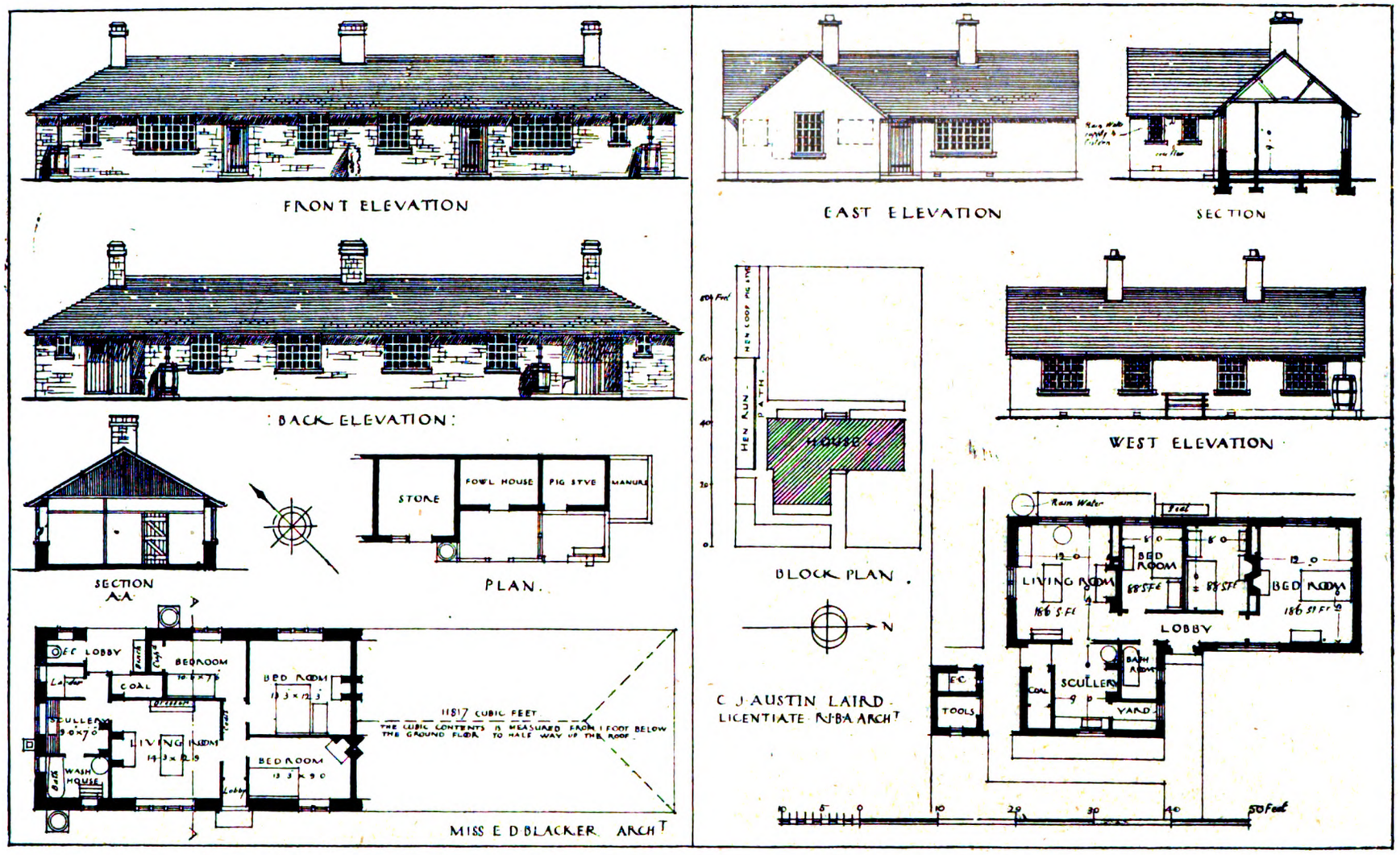

ROYAL NATIONAL EISTEDDFOD COTTAGE COMPETITIONS, PRIZE DESIGNS CLASS C.

Miss E. D. Blacker, Architect, and Mr. C. J. Austin Laird, Architect.

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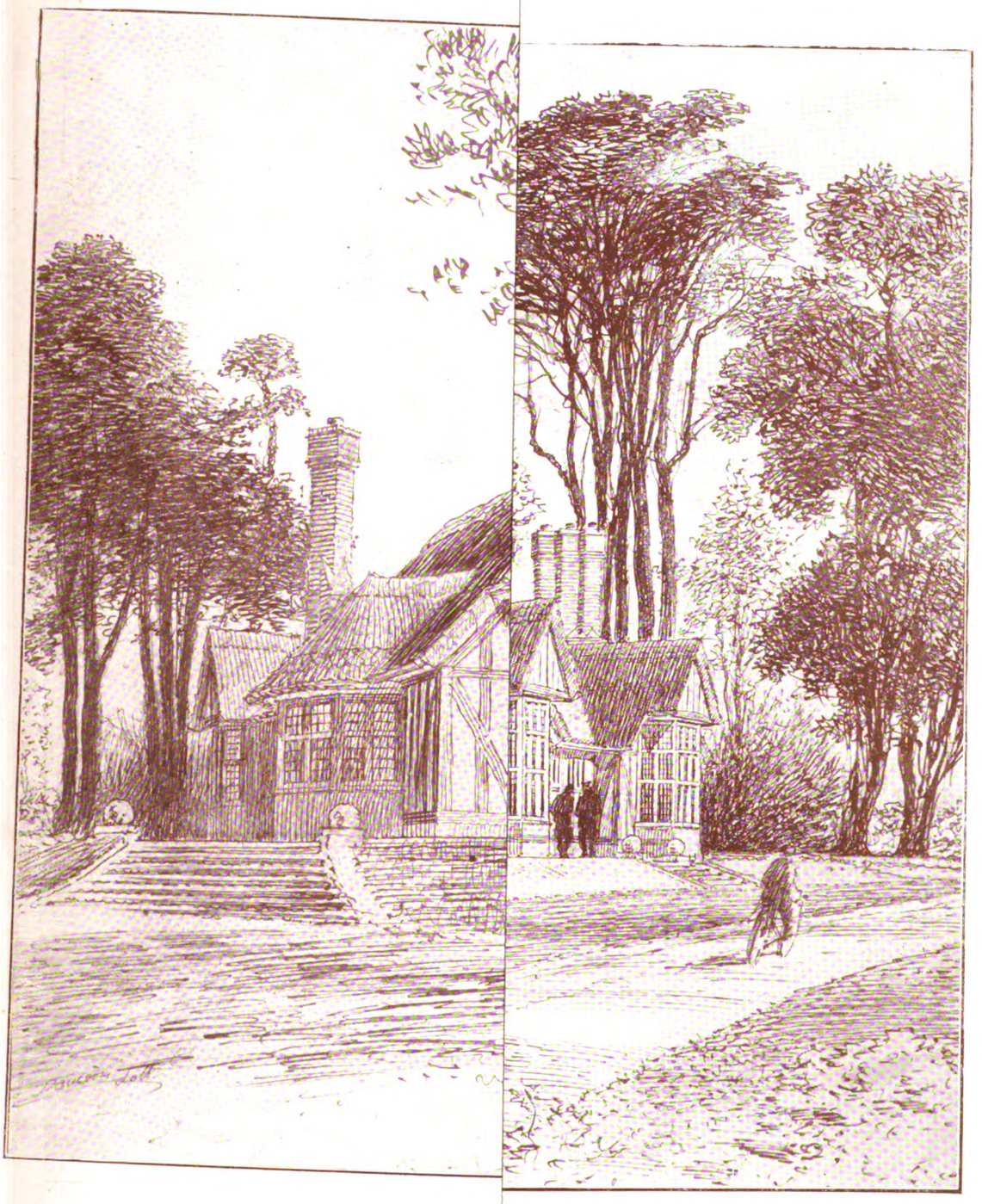

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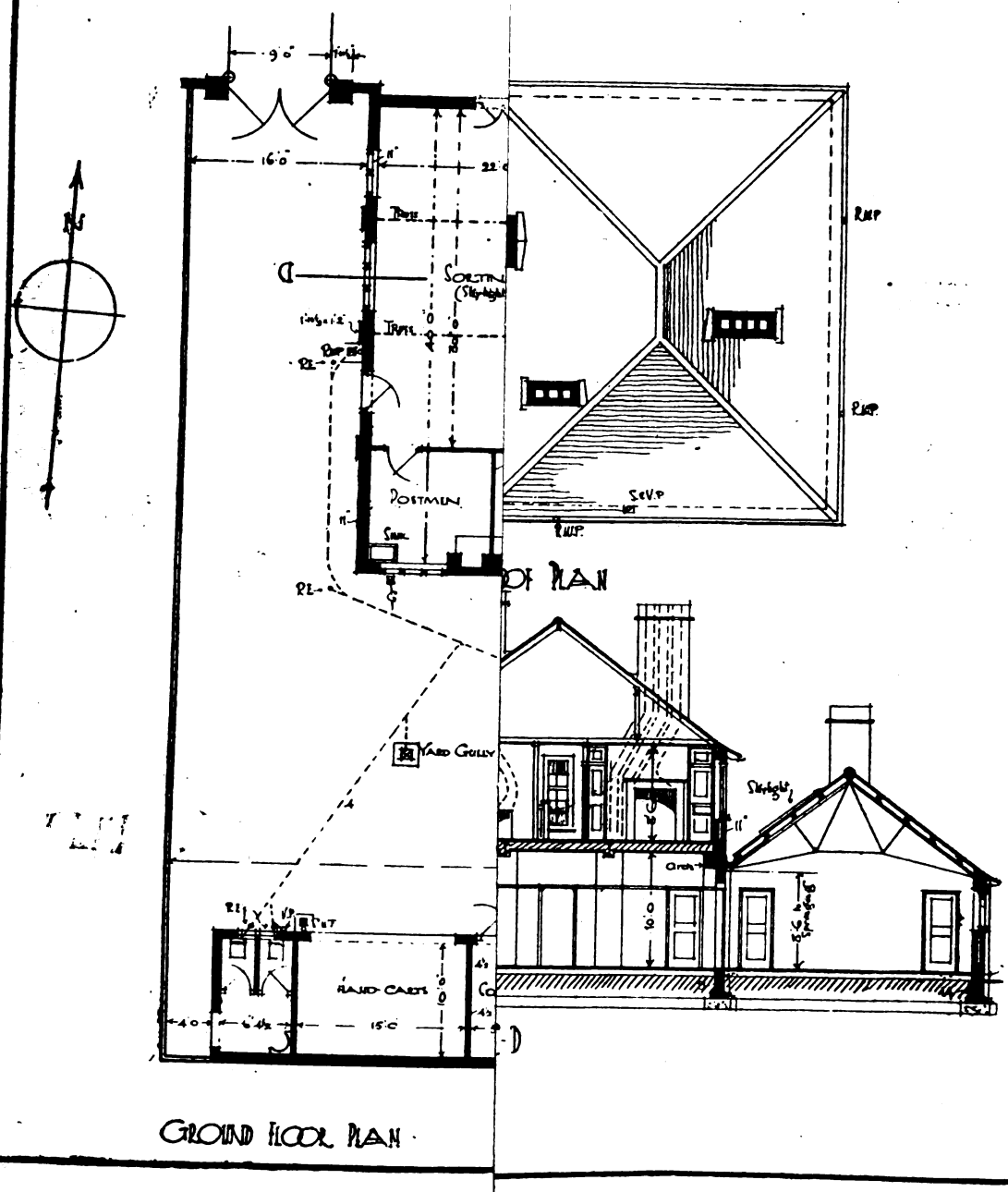

OF PLAN

GROUND FLOOR PLAN

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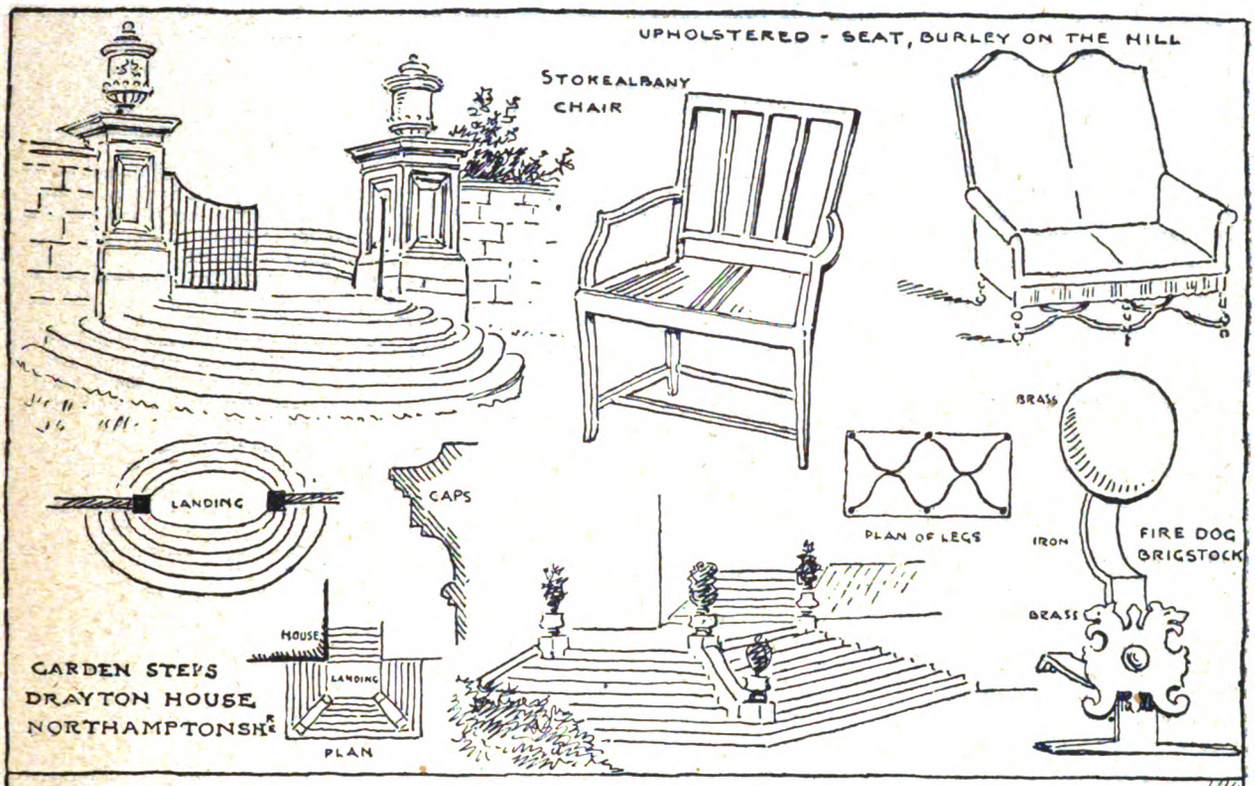

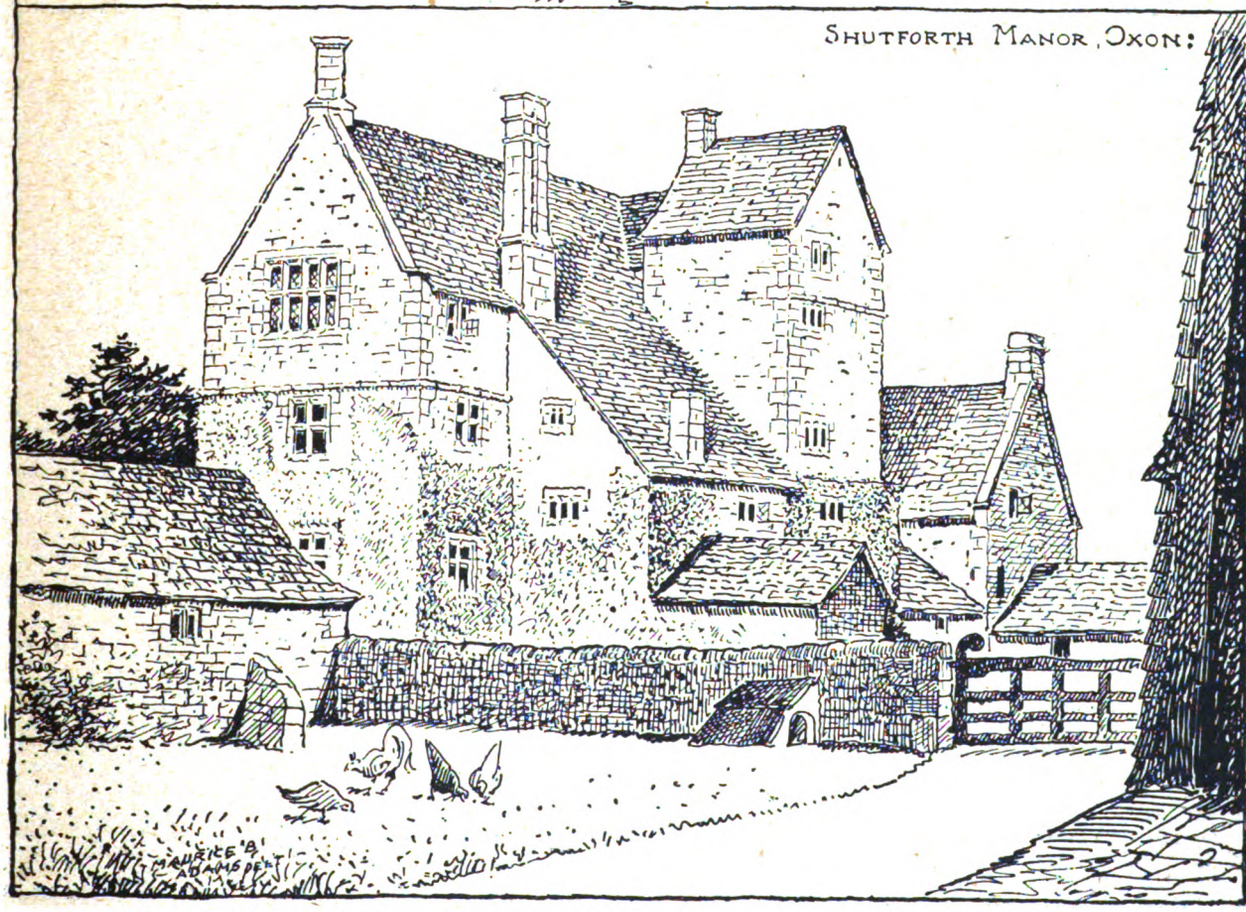

SUCCESTIVE DOMESTIC WORK FROM MAURICE B. ADAMS' SKETCH BOOKS

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Our Illustrations.

A SURREY GOLF CLUB HOUSE.

The erection of this picturesque building has been postponed till the end of the war. It is intended for a new course within easy reach of London. The ground is already in excellent playing order, and only needs this accommodation before it is opened for use. The club house will occupy a site in about the centre of the course, which will be commanded from its windows. Moreover, it is on the top of a hill overlooking exceedingly fine views. The setting among pine trees is ideal, and Mr. Davison's sketch of the site gives a very good idea of their appearance. The wings of the building are bent back from the centre in order to fit the contour of the hill. The view illustrated is that of the main approach, but the carriage entrance has been kept on the rear frontage, where the offices and outbuildings, such as the caddie master's quarters and professional's shop are situate. This drawing was exhibited at the Royal Academy last summer. The centre of the block is devoted to a lounge hall, on the left are dining and smoking rooms, and on the right are changing rooms for men and women members. Mr. W. Charles Waymouth, F.R.I.B.A., of High Holborn, is the architect.

THE POST OFFICE (GRETNA HOUSING SCHEME), EASTRIGGS, NEAR CARLISLE.

The township post office illustrated by our double-page sheet to-day is clearly represented by the architect's working drawings. The descriptive particulars we published in our issues of October 2, when the general lay-out plan of all the buildings appeared among our illustrations. The post office is in Annan Road, near the railway. We have already given the Institute and shops and types of workers' dwellings of various sizes, the hall for meetings and entertainments, the chief engineer's house and the doctor's residence, in our issues of October 2, 16, and 23. The work has been carried out by a group of architects (whose names we gave at the outset) acting under the directorship of Mr. Raymond Unwin, of the Explosives Department of the Ministry of Munitions.

ROYAL NATIONAL EISTEDDFOD COTTAGE COMPETITIONS. HOUSING UNDER CLASS C.

The Welsh prize designs submitted in these competitions for the Classes A and B were illustrated in our issue for October 9. To-day we give the two prize plans for Class C cottages, which are arranged on one floor, each dwelling having three bedrooms, a living-room kitchen, a scullery, larder, outside w.c. and coal place. The interest of this particular competition is increased by the fact that a lady architect, Miss E. D. Blacker, divided the honours of the occasion with Mr. C. J. Austin Laird, the judges being of the opinion that the merits of the two designs were equal, and we are inclined to confirm this judgment. Miss Blacker adds a substantial outbuilding for the store, hen house, and pigstye, with a good manure pit—put, we presume, at the back of the plot. Mr. Laird on his block plan locates this accommodation nearer the cottages, the hen run coming close up to the E.C. at the end of the block. His house is detached, but so arranged as to be capable of being made one of a pair. Miss Blacker roofs her semi-detached dwellings under one roof without any break, whereas Mr. Laird breaks his house forward, showing three gables at the ends in lieu of hips. His entrance lobby is to be preferred to the transverse darkish passage in the lady's plan, and his third bedroom has the gain of warmth from the back of the living-room range, besides which his larder is away from the E.C. Miss Blacker puts it next door. Both E.C.'s must have the receptacle worked from the side or inside the closet.

STRUTFORD MANOR HOUSE, NEAR BANBURY, AND SOME NORTHAMPTONSHIRE SKETCHES.

The village of Strutford nestles among the Oxfordshire hills, and perhaps its chief architectural attraction is the uncommonly dignified entrance side of the old Manor House treated as a frontispiece, with a good Jacobean porch set off by an array of mullioned windows along the front in a formal style, range above range. An assumption of so pretentious a character in houses of this class, and at an early date is not often met with, and its composition indicates an advance towards the subsequent mannerism of the English renaissance. The hinder parts of the building, however, present a distinct contrast to such formality, owing mainly to the picturesque quaintness of the rear roofings. These are marked by a diversity of line, emphasised by the saddle-back roofed tower treatment adopted for the staircase block, suggesting a transept, although actually the lower face of the walling is flush with the wall of the main structure. An arrangement of this sort befits a farm house, and for a long while the building has served this purpose. The end of the house nearest to the spectator as shown by the accompanying sketch, taken from the homestead yard, has a six-light mullioned window belonging to an important room still possessing the original stone chimney-piece. Its walls are wainscoted in oak, and above the panelling is an enriched frieze set off by a nice cornice. The farm shed in the view obscures the major part of this window. Strutford Church has several points of interest, but the fabric suffers from over restoration carried out in the nineteenth century. A Perpendicular screen, however, escaped the scraping process, and is worthy of attention.

The remainder of these pen and ink notes are self-explanatory, so no comment is needed. The stone garden steps from Drayton House shown in the upper part of the sheet are very simple, uncommonly suggestive, and distinctly pretty, the result of taste and thought marked by little effort.

The form of the Harrow School war memorial proposed is a cross with or without some other architectural monument, and should funds suffice a memorial hall to contain a record of the achievements of the fallen, and a gallery for portraits.

The death took place quite suddenly on the 4th inst. of Sir James W. Restler, K.B.E., M.Inst.C.E., chief engineer to the Metropolitan Water Board, at the age of 67. Sir James was also consulting engineer to a number of private and local water enterprises, and a vice-president of the National Fire Brigade Union. He was knighted last June.

A meeting of the Paint and Varnish Society will be held at St. Bride's Institute, Bride Lane, Ludgate Circus, E.C., on Thursday, November 14, 1918, at 7.0 p.m. prompt, when a paper will be read by Mr. Louis Hanks, entitled "Painters' Difficulties with regard to Ready Mixed Paints." Members of the society are requested to kindly extend invitations to any of their friends or representatives likely to be interested. The council cordially invite offers from members of short papers which are likely to form the bases of good discussions.

THE SURVEYORS' INSTITUTION.

The opening address of the first ordinary general meeting of the Surveyors' Institution was given on Monday last by Mr. John Hubert Oakley, the President.

I desire, said Mr. Oakley, to take the opportunity afforded by the delivery of the presidential address, with which it has been customary for the Institution's session to be opened, to thank every member of the Institution, whether present or absent, for the great honour they have conferred upon me in placing me in the responsible position I now occupy.

I am well aware that I do not owe this distinction to my special personal merit or qualification, but to the fact that ever since I first entered my father's office, just over thirty years ago, I have been in close touch with the Institution as student, Professional Associate, and Fellow, qualifying for each step by examination, and finally have for the last eleven years obtained experience in the management of the Institution's affairs as one of your elected representatives on the Council. I also fully realise that I am indebted to many kind friends, both of my father and myself, for holding out a helping hand, and for giving me opportunities without which I, like many others, some far better qualified than myself, would never have reached this position, or, at any rate, not for some years to come.

I also had the advantage of becoming, at the age of twenty-five, a partner in one of the oldest, and, I venture to think, one of the best known firms of land agents, surveyors, and auctioneers which had been established some 150 years, and of which my father, Christopher Oakley, was for some years senior partner. As you are aware, he preceded me in this chair, being elected President of the Institution in 1897, while my grandfather, John Oakley, a previous senior partner in the firm, was, I am pleased to say, one of the original committee who founded the Institution in 1868, and was one of the first members of the Council, although he did not live long enough to occupy the chair.

I mention these points because, although no one could appreciate the honour you have done me more than I do, I am well aware of the exceptional advantages I have enjoyed through my family's long connection with the institution and its work.

On the other hand, I do not think you will look upon me as presumptuous if I say how proud I am to have been able to uphold the name of the old firm sufficiently to cause you to feel justified in electing me as your President, the youngest, I believe, you have had, and the first, I think I am correct in saying, who qualified for membership by means of the regular course of examinations.

I am aware how loyal has been the support accorded in the past to occupants of this chair, both by the Council and by the body of members, and I feel every confidence in asking you to continue that support to me. I can assure you that, whatever my shortcomings and deficiencies may be, no one has the interests of the institution and its members more closely at heart, and it will be my aim to do everything in my power to further the interests of both during my year of office and subsequently.

Many Presidents in the past have experienced a doubt as to the subject which they should select for their opening address; but I have been spared any difficulty on that head. It has not seemed to me that there could be two opinions as to the subject upon which I should address you this afternoon. The institution has just completed its fiftieth year, and its jubilee seems undoubtedly to call for a sketch of its activities since its foundation in 1868, and some consideration as to the manner in which the aims of its founders have been carried out. My difficulty, therefore, must be not in the selection of a topic, but in doing justice to so important and wide a subject in the short time at my disposal.

I am aware that a sketch such as I contemplate is in danger of proving somewhat statistical and heavy, and I fear that I do not possess the facile pen required to avoid these pitfalls. The subject, however, is one which must possess a personal interest to

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every member of the Institution, and I feel therefore, the greater confidence in claiming your indulgence for any shortcomings on my part in placing the story before you.

Even in normal times only a small percentage of our members can attend the opening meeting, and in present circumstances the number must be still smaller, but I sincerely hope that members in all parts of the kingdom will read this record of the Institution's fifty years of life, however poor my effort in bringing it before them may be.

My reason for making this appeal is because in the course of my visits to different parts of the country in connection with my business I have formed the opinion that a substantial—I will not say a large—percentage of our members do not realise the importance of the work which the Institution has done and is doing, nor how the demands upon it increase almost from day to day. In order that it should retain its present status, and should be in a position to meet the ever-increasing calls upon it, it is, I venture to say, essential that each one of its members should feel himself part of a virile and living body, and realise how greatly the strength and usefulness of that body must depend upon the support and work of individual members. Turning now to the

HISTORY OF THE INSTITUTION,

I have already stated that it was founded in 1868 by a group of men who now seem to figure gigantic in our professional records. After fifty years comparatively few remain who can speak from personal knowledge of those great men, but names such as those of John Clutton, Edmund James Smith, Edward Ryde, Horatio Lloyd, and others which appear on the board behind me, to whose outstanding qualities our late Associate Member of Council, Lord Alverstone, so often bore witness, will ever be remembered in the profession.

With such progenitors the new society was launched with every prospect of a successful future. The wide range of their businesses took them to every part of the kingdom, and brought them into touch with the leading men in every district, so that they were enabled by precept and example to secure the adhesion and support of leading representatives of the profession throughout the country.

Nor was the moment unpropitious for floating the new society. In the first part of last century the profession of surveyor, as at present understood, was almost unknown, or, at any rate, occupied a very different position from that which it now holds. But the great development of every kind which synchronised with the early part of the Victorian era, the development of railways, the land enclosures, tithe commutation, copyhold enfranchisement, the Poor Law Acts, and other important legislation connected with land, all gave rise to additional demands for the services of men having a knowledge of these matters, and in a position to advise upon the intricate and difficult questions connected therewith. With the demand arose the men, and these in their turn early recognised the advantages of meeting together to discuss questions arising out of their business and for social intercourse.

As a result various professional associations were formed, such as the Land Surveyors' Club (1834), and the Surveyors' Association (1864), though a still older body, the Surveyors' Club (the membership of which was mainly confined to building surveyors), was established in 1792. But these bodies, though confined to the profession, were necessarily limited in membership by the fact that the meetings took the form of their members dining together at certain intervals, with the result that by degrees they developed the social rather than the professional aspect. The advantages obtained from these informal gatherings pointed to the probability of still greater advantages being derived from an association more distinctly professional in character, and including within its membership all persons possessing the necessary training and qualifications.

A meeting of those likely to be interested was therefore called on March 23, 1868, when the following resolutions were passed:—

"That it is expedient that an association be formed to be called 'The Institution of Surveyors.'

"2. That the undermentioned gentlemen do, with this object, form themselves provisionally into such an association, and take the necessary preliminary measures for organising the Institution, viz.: Messrs. Chas. F. Adams, Virgoe Buckland, Wm. Jas. Beadel, Fredk. Jas. Clark, Edward Norton Clifton, John Clutton, Henry Crawter, John Bailey Denton, Robert Collier Driver, Richard Hall, Thomas Horsey, Henry Arthur Hunt, Thomas Huskinson, Jeremiah Matthews, John Oakley, Edward Ryde, Edmund James Smith, William Sturge, George Trist, and Francis Vigers."

It is pleasing to see how many of these names are still ably represented in the profession.

A committee was formed to draw up by-laws and regulations, which were adopted at a meeting on June 15, 1868, and the Institution formally launched on its career.

The first Council was as follows:—

President:
John Clutton.

Vice-Presidents:

Henry Arthur Hunt.	Richard Hall.
Jeremiah Matthews.	Edwd. Norton Clifton.

Members:

Wm. James Beadel.	John Oakley.
Fredk. James Clark.	Edward Ryde.
Henry Crawter.	Edmund Jas. Smith.
John Bailey Denton.	William Sturge.
Robt. Collier Driver.	George Trist.
Thomas Huskinson.	Francis Vigers.

Associates:
John Horatio Lloyd.
Fredk. Jas. Bramwell.

Hon Secretary:
John Wornham Penfold.

THE OBJECTS OF THE INSTITUTION.

Having thus traced the origin of the Institution, it remains to see what were the objects in the minds of its founders, and how these objects have been carried out. These were dealt with very ably and fully by John Horatio Lloyd in the discussion on the opening address of the president on November 9, 1868. He divided them under three main heads: (a) Intellectual advancement, by promoting a higher standard of educational training; (b) Social elevation, by raising the status of the profession in the eye of the public; and (c) Moral improvement, by fostering the best spirit of professional conduct. It will be noted that the duty of looking after the interests of members—although an important part of the Institution's work—was not included by him among the principal objects for which it was founded; and I am inclined to think that this readiness to give the first place to ideals likely to benefit the public as well as the profession proved one of the greatest factors in the success which attended the formation of the Institution. I am happy to believe that members, especially those possessing a special knowledge from their work on the Council and Committees, will bear me out in saying that these objects have not been overlooked, but still provide the guiding principle upon which the administration of our affairs is based.

Before dealing with the manner in which these objects have been carried out, I should perhaps, touch very shortly on the growth of membership and similar domestic matters. I do not propose to trouble you with detailed tables of statistics. These will be found in the annual reports of the Council. Suffice to say that the Institution commenced with a membership of about 200, and grew steadily year by year until 1914, when the total of all classes reached 5,387. A most important addition to the membership took place in 1905, when the members of the Irish Land Agents' Association were admitted *en bloc*, becoming the Irish Branch of the Institution. Their connection with the Institution has proved a source of strength on both sides of the Channel, and in 1916 we were proud to welcome a very distinguished member, Mr. George F. Stewart, as the first Irish President of the Institution. We still have to look forward to a president from north of the Tweed, but we hope that the consummation of our wishes may now not long be delayed.

The effect of the war in cutting off the supply of candidates for examination and election, and, alas, in removing from the list many members who have died in the great cause, has been to prevent the normal wastage from death and retirement being made good, so that a slight reduction in membership has taken place during the past four years, the total now being 4,896. I do not, however, look upon this as any indication of weakness, but rather feel surprised that the reduction has not been more marked, and confidence in the future from the manner in which the Institution has stood the strain of the war.

THE FIRST HOUSE.

One of the earliest duties of the first Council was to provide a suitable home for the Institution, and I think that we may congratulate ourselves on the fact that they selected Westminster as its *locus*, and that except for the period during which the present house was in building our address has always remained the same, 12, Great George Street. I am having reproduced with this paper a drawing of the original house which may, I think, prove of interest to members. They started modestly, occupying the first floor only, but by 1872 the Institution seemed sufficiently firmly established to warrant, and the attendance at its meetings to require, further accommodation. The superior lease of No. 12 was acquired, and extensions planned to provide a lecture hall and council room, the secretary's room, and other necessary offices, leaving the remainder of the building either to be let off in offices or to be used for the housing of the library, the nucleus of which was then being acquired. This work was completed in 1873, and with the growth of membership it became necessary by degrees to occupy the whole house. In 1887 the leases of the adoining houses in Little George Street were purchased, and by that means the site of the present building, the early need for which was already apparent, was secured.

(To be continued).

Our Office Table.

The building operations in the larger cities of the United States were far fewer in 1917 than in 1916. In 60 selected cities 199,738 permits were issued for buildings erected in 1917, a decrease of 70,044. The cost of these operations was $584,193,378 in 1917, as against $899,684,512 in 1916. The principal causes of decrease were the scarcity and high cost of material and labour. For 1917 a total of 145 cities reported operations costing $687,415,605. For 1916 practically the same cities reported operations costing $1,024,211,675. Of the 145 cities reporting for 1917, 129 stated operations by classes of structures. The total cost of the buildings erected in them was $632,694,952. The part of this amount expended on wooden buildings was $168,290,958, or 27 per cent; on brick or hollow tile buildings, $322,147,677, or 51 per cent.; on stone buildings, $4,589,168, or less than 1 per cent.; on concrete buildings, $66,511,300, or 11 per cent.; and on steel skeleton buildings, $58,440,361, or 9 per cent.

When a beam, the weight of which can be neglected, has one end built into a wall and the other end loaded, the flexure of the beam is accompanied by a twist of successive sections with respect to each other unless these sections are symmetrical. According to *Nature*, the relation between the flexure and torsion has been worked out for beams of certain simple sections by Mr. A. W. Young, Miss E. M. Elderton, and Professor K. Pearson, in a Drapers' Company research memoir recently published. Some of the conclusions have been verified experimentally, and the authors hope that the research will serve as a first step towards the understanding of the relation between flexure and torsion in propeller blades.

Messrs. C. Jennings and Co., Limited, of Pennywell Road, Bristol, inform us that they are in a position to supply a large quantity of doors, windows, turnery, manufactured

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woodwork of any description, also plywood and timber, to any part of the world, and are capable of turning out the following yearly: 200,000 doors, 200,000 windows, 5,000,000 ft. of mouldings and other woodwork. This would no doubt be interesting to readers who are interested in the rebuilding of Belgium, France, and other places, or for the Housing Scheme in the United Kingdom. They inform us that their No. 8 list, which was issued pre-war, is still current as far as patterns are concerned; but prices at present would range, on the average, about three times those shown in the list. To any of our readers who have one of these lists in their possession this information may be interesting at the present moment when the building trade is likely to require huge quantities of such woodwork. Messrs. C. Jennings and Co., Ltd., inform us that they cannot agree to send these lists free under present conditions, but they will send forward a copy of their 280-page illustrated and priced list on receipt of 1s.; also that the reward of £1 they offered to the first person who could send them a list containing more information about woodwork has not yet been claimed, and they still hold their offer open.

On July 14, 1914 (p. 166) the London County Council accepted the tender of Morrison and Mason, Limited, amounting to £23,268 6s. 8d. for the extension of the embankment wall at the new County Hall. The work was practically completed in May, 1917, and the account as agreed amounts (subject to audit) approximately to £22,273 together with an agreed sum of £1,600 due under conditions approved by the Finance Committee. Out of these sums there is a balance of about £2,763 still remaining to be paid, and the Establishment Committee recommends that authority be given for the immediate payment to Morrison and Mason, Limited, of a further sum of £2,500 in respect of their contract for the extension of the embankment wall at the new County Hall.

It is stated that more timber has been taken from Montgomeryshire since the outbreak of war than from any other county in the kingdom. All the timber has passed over the Cambrian Railways system.

Newport (Mon.) Town Council last Saturday decided to promote a Bill in Parliament to provide an additional water supply. The construction of the works is estimated to cost over £1,000,000. There will be a reservoir in the Caerffanel Valley, near Talybont, with a capacity of 2,500 million gallons. The pipe line will be thirty-two miles in length. Water is required for new works to be constructed at Newport.

An award has recently been made as to the value of certain land in Broadway, Westminster, acquired by the London Electric Railways Company. The claimants asked £3,200, and said that recently an offer of £5,500 was refused. Two surveyors who gave evidence for the railway company assessed the value at £1,604 and £1,692 respectively. The arbitrator, Mr. H. F. Lofts, F.S.I., awarded £2,458.

FOR
Olivers' Seasoned Hardwoods,
APPLY TO—
WM. OLIVER & SONS, Ltd.,
120, Bunhill Row, London, E.C.

TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

GOOLE.—For decorating and painting interior of the Council offices:—
Haigh, A. (accepted).

LONDON.—For adaptation of practical workrooms for evening institute at the Woolmore Street School, Poplar, for the London County Council:—

Griggs and Son	£456	0	0
Roberts, L. H. and R.	389	0	0
Roberts, C. P.	370	0	0
Symes, A. E.*	317	0	0

(*Recommended for acceptance.)

LONDON.—For covering the humidity drums with copper wire gauze, in lieu of the worn-out coir matting, and fitting new piping, water-spraying nozzles, etc., in connection with the plenum system of heating and ventilation at South Hackney Central School, Cassland Road, Hackney, for the London County Council:—

Jeakes, C., and Co., Ltd.	£380	0	0
Strode and Co., Ltd.	365	0	0
Cannon, W. G. and Sons, Ltd. ..	266	0	0
Bradley, G. and E...	257	0	0
Comyn, Ching, and Co., Ltd.*	244	0	0

Chief Engineer's estimate, £260.
(*Recommended for acceptance.)

LONDON, S.W.—For various works, for the London County Council. Accepted tenders:—
Hainault Forest, painting and tarring work, Radley, W., £62 13s.; Hilly Fields, taps and piping for water supply to allotments, Hewens, £30 2s. 6d.; Marble Hill, painting and tarring work, Butt and Sons, £62; Victoria Park, taps and piping for water supply to allotments, Conway, £50; repairs to entrance gates, etc., at one of the parks, Mowlem, J., and Co., Ltd., £312 11s. 3d.

NOTTINGHAM.—For new bathroom, etc., at the Swinton Special School, for the Education Committee:—
Stamp, J. W., and Co. (accepted) £100 8 0

Mr. George H. Widger, sanitary inspector to the Godstone Rural District Council, has been appointed borough surveyor and sanitary inspector of Totnes.

A Channel tunnel scheme is in project for Japan. Permission has been applied for to construct a tunnel under the Shimonoseki Straits, connecting Kyushu with the mainland. The length of the tunnel would be about six miles.

The borough surveyor of Gloucester, Mr. R. Read, has been authorised to obtain the assistance of Mr. H. A. Dancey in preparing the plans of different types of houses for the consideration of the Dwellings for the Working Classes Committee.

At the Incorporated Institute of British Decorators, at Painters' Hall, Little Trinity Lane, on Tuesday, November 12, 1918, a paper will be read by Mr. Ivor Beaumont, A.R.C.A., M.S.A., F.R.S.A., F.I.B.D., subject, "Unity in Architecture and Colour Decoration." The chair will be taken at 6.30 p.m. The paper will be illustrated by lantern slides.

LIST OF TENDERS OPEN.

BUILDINGS.

Nov. 20.—Taking down, removing, and re-erecting at Kells the mission chapel at Blackbeck, and fencing the site at Kells. Particulars on application to Rev. E. Campbell, 3, Cross Street, Whitehaven, to whom tenders are to be addressed by November 20.

Nov. 22.—Shelving for 6,000 books at Newtown, Montgomeryshire.—For the Montgomeryshire Village Circulating Library.—Plan and specification on application to Mr. L. Phillips, clerk to the Education Committee, County Offices, Newtown. Tenders by November 22.

Nov. 22.—Reconstruction of the single-floor transit shed (Shed "A"), situate on the east side of Avonmouth Dock, Bristol.—For the Docks Committee.—The Secretary of the Docks Committee, Docks Office, 19, Queen Square, Bristol.

Nov. 22.—Masons', joiners', and plumbers' work in connection with mortuary alterations.—For the Guardians of Dewsbury Union.—Specifications, bills of quantities, etc., from the architects, Messrs. W. Hanstock and Son, Branch Road, Batley.—Tenders to C. P. Pickersgill, Clerk, Union Offices, Wellington Street, Dewsbury.

ENGINEERING.

Nov. 14.—Alterations and additions to the coal and coke handling plant in the No. 2 retort house at the Bradford Road, Manchester, station.—For the Gas Committee.—Tenders to the Chairman of the Gas Committee, Gas Offices, Town Hall, Manchester.

SANITARY.

Nov. 16.—Scavenging of Lindeth (Lancaster).—For the Lancaster Rural District Council.—Tenders to W. D. Ball, Clerk, 5, Dalton Square, Lancaster, by November 16.

Nov. 16.—Scavenging of Warton (Lancaster).—For the Lancaster Rural District Council.—Tenders to W. D. Ball, Clerk, 5, Dalton Square, Lancaster, by November 16.

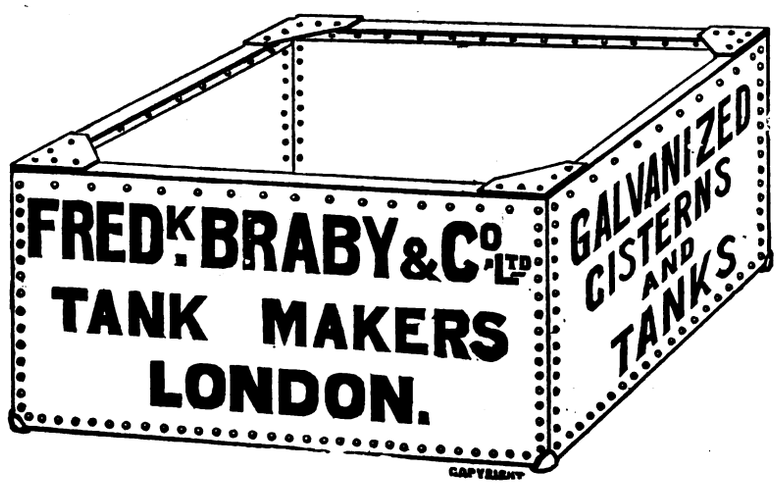
Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

The death is announced on November 11, at Grosvenor House, Acton Vale, W., of Mary, the dearly loved wife of Mr. Edward Monson, J.P., F.R.I.B.A., in her 71st year.

We regret to announce the death, on November 8, at 4, Marchwood Crescent, Ealing, of pneumonia, following influenza, of Archibald Hugh Payan Dawnay, F.R.C.S., the beloved husband of Annie Burgess (Lily) Dawnay, and eldest son of Lt.-Col. Sir Archibald D. Dawnay, J.P., of London and Cardiff.

Mr. James Milne, an Aberdeen artist, whose death is announced, received his art training at Gray's School of Art, Aberdeen, and was subsequently art master in Peterhead. On returning to Aberdeen he painted in oils and water-colours, and latterly devoted himself to the production of etchings.

ALL OUR CISTERNS, TANKS & CYLINDERS



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November 20, 1918. Volume CXV.—No. 3333.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

A Tudor Dining Hall in a Country House. Designed by Lieut. G. Murray Adams-Acton, S.G.

H.M. Stationery Office, Waterloo, now used as King George V. Military Hospital. View of Stamford Street front (Royal Academy, 1918). Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, Architect.

King's Sutton Manor House, near Banbury. Sketched by Mr. Maurice B. Adams, F.R.I.B.A.

Royal National Eisteddfod Cottage Competitions. Living-in Quarters: Prize designs. Messrs. Thomas and Morgan, Architects, and Mr. Herbert North, F.R.I.B.A., Architect.

Currente Calamo.

Can a doorway, when the door is often opened to let in light to a room, become in course of time an "ancient light" within the meaning of the Prescription Act, 1832? This question, though it looks merely academical, is of some practical importance. For windows as ancient lights are already worry enough to architects and builders, but to have the same trouble over the unexpected rights of old doorways would be a nuisance indeed. Although this statute has been in force for eighty-six years, this pretty point of law has only just been first raised in the recent case of "Levet v. The Gas Light and Coke Company." There the plaintiff sued for an injunction and damages, claiming a prescriptive right to light coming through doorways the doors of which were kept open when the weather permitted. The plaintiff's premises in question were in Horseferry Road, Westminster, a two-story building used for the business of wood-turnery. On the ground floor was a doorway with a workman's bench near by where finishing work was done, and the men used to keep the door open to get as much light as possible, when the weather was suitable. There was also a door on the first floor often open for light in the same way. The house was in a narrow passage, defendants' premises being opposite the plaintiff's. The company had acquired some buildings on plaintiff's side of the court, and had lately built a bridge to connect the houses in their occupation. It was said that this bridge reduced the light coming to the plaintiff's rooms through his doorways when the doors were kept open. There was evidence that the defendants' bridge did reduce the plaintiff's light. But the legal point was whether any right to light could be acquired in this way. Mr. Justice Peterson held that it could not. All decided cases dealt with windows or other apertures made for the purpose of admitting light, and he thought an ordinary door which was left open to let in light from time to time could not become an ancient light, even after twenty years' user. So the claim failed, and the plaintiff's action was dismissed.

It is gratifying to read the statement in the *Times* of Monday last that the safety of St. Paul's during the air raids has been largely due to the Watch organised by Mr. Mervyn Macartney, the architect, assisted by the clerk of the works and Mr. L. A. Turner, who has been indefatigable in his services as secretary. It has consisted of architects and other professional men, with guides, vergers, and workmen belonging to the cathedral staff. These men, trained by the London Fire Brigade, have been on guard every night for more than three years, ten or fifteen being often present at one time, and stationed (with fire hose ready) at the posts allotted them, when a warning was received. Many have attended two or three nights a week, and the whole country owes them a debt of gratitude for their devoted service. Through the cold and dark nights of three winters these men have been on guard in the national cathedral, often compelled, if a late warning came through, to spend the whole night there between two busy days of work, beds being provided for such sleep as they could obtain. A system of telephones from the crypt to the various roofs has made for united action. It was in September, 1915, that the danger to the cathedral first became pressing. At a quarter to 11 on the night of September 8 a Zeppelin was seen by the watchers on the roofs approaching rapidly from the west in the glare of the searchlights, and a great fire began at Wood Street, in the close vicinity of the cathedral, which for two hours and a half illuminated the whole building, while thousands of people hurried up Ludgate Hill "to see St. Paul's on fire" On two other occasions—in June and July, 1917—the cathedral had very narrow escapes from the bombs of Gothas flying in broad daylight. Twice it was struck, at night, by anti-aircraft shells, one of which penetrated, with great force but comparatively little damage, the roof of the south transept. On June 13, 1917, a small part of an explosive bomb which fell within a few yards of the north side of the building was thrown up on to the Stone Gallery, where a slight dent was made in the asphalte by the impact of it. This is the only mark which Germany has left on St. Paul's Cathedral.

The Local Government Board has issued another Circular about the Housing of the Working Classes to the Councils of Metropolitan, Town, and District Councils, urging all local authorities to forward at once, in view of probable shortage of their staffs, a list of officers on active service, with their full names, rank, regiment, and official numbers, and the new President of the L.G.B. will do his best to secure the early return of such to their civil posts. That is a wise step, and Sir Auckland Geddes is to be congratulated on having taken it. Sir Auckland also asks from the councils a prompt return—at the latest by the 1st proximo—of the following particulars:—

Are the local authority prepared to provide any necessary houses for the working classes for their district, so far as not otherwise provided at an early date?

Are they prepared to do so on the terms set out in the Board's circular of March 18 last?

When will their scheme or schemes be ready for submission to the Board with the particulars asked for in the circular above referred to, and for how many houses will they provide?

Have the necessary sites been—

(a) selected?

(b) acquired?

Is there any work, such as the development of the housing sites and the construction of roads, sewers, etc., which can be put in hand immediately when demobilisation begins, without waiting for the final approval of the plans of the houses?

A form for supplying this information is enclosed. It is plainly and intelligibly worded, and Sir Auckland Geddes evidently means business. We hope he will not be humbugged by the Ministry of Reconstruction, which, in its report on the position of the building industry after the war, has evidently caught the bacillus of pessimism which Mr. Hayes Fisher doubtless left behind him at the Local Government Board!

The Committee appointed by the Minister of Reconstruction to consider the position of the building industry after the war issued its report last Thursday. The Committee describe the general lines which their investigations have followed. They define the termination of the transition period as that date at which there will be sufficient building material available to meet the needs of all. The result of their investigations has satisfied them that at least for the first two years after the war there is likely to be insufficient materials adequately to meet the demand. The transition period may be two years or more. Their main objectives were to devise means of reducing this period to the utmost and to secure the earliest possible

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increase of production of materials so as adequately to meet the demand. It would appear that the average annual production of bricks during the last three years prior to war was 2,805,748,000, and the output for the year 1917 was 1,052,246,000. The *expressed* demand is for 2,937,229,750 during the first year after the war. It was desired, and in some quarters it had been thought probable (but in this the Committee do not concur), that 300,000 houses may be built in England and Wales in the first year after the war. That number of houses would require 6,000,000,000 bricks, 50 per cent. more than may be expected to be produced annually even if the existing works are made to produce to their utmost capacity.

Most well-informed people will heartily endorse the statements made last Wednesday at a meeting of the Manchester Statistical Society by Mr. A. W. Shelton (Nottingham), a member of the Local Government Board Housing Advisory Conference, who read a paper on "The Housing of the People." Mr. Shelton very truly said that to assume that the present unparalleled shortage of cottages is mainly due to war conditions, financial and otherwise, is a fallacy. Had there been no war there would have been still a grave shortage, which in time would have brought about a general house famine. Only about half as many houses were built in the five years before the position was affected by the war as in the preceding five years. With the coming of peace, possibly 550,000 or even 600,000 new houses would be needed —this apart from the daily growing requirements necessary to meet the normal growth of the population. The shortage in rural districts was probably from 25 to 30 per cent. of the whole. Experience had abundantly proved that working-class houses built by local authorities had generally cost considerably more than dwellings of similar accommodation provided by house builders, and the remark applied even to a greater extent to housing directly provided by the State. He described as a "fundamentally bad and pernicious principle" that of the owner paying all local taxation in respect of working-class housing. This applied probably to 90 per cent. of all working-class dwellings in the country, and obviously prevented the intelligent realisation of what true citizenship really means and what it costs. While universal rating and direct payment of all rates would involve great difficulty, it was a change which should be adopted, in order that the great masses of the people might be made fully to understand their obligations and responsibilities to the State. The Government should consider and introduce legislation at the earliest moment to deal with rating reform, the relief of local rating from the cost of national services, particularly education, Poor Law, and main roads, and also to deal with "dishonest, destructive, and filthy tenants." Mr. Shelton referred to the number of committees of one kind or another appointed by the Local Government Board or the Ministry of Reconstruction to consider various phases of the problem. There was no indication how soon the report of the Financial Assistance Committee would be forthcoming, but he was inclined to think its findings would have an important effect in the future. A scheme which was under the careful consideration of the President of the Local Government Board was in effect a partnership between the State, the local authority, the building society, and the tenant. It provided for the building of the houses at a price which would give the builder a living profit.

It is asked, and with good reason, by a Manchester correspondent, is it not a fact that absolutely the whole of the houses built in the past, and now held to be so undesirable, though built by private enterprise, were built and accepted as satisfactory at the time by the local authorities in the area concerned as regards size of rooms, width of streets and passages, number of houses in a block or per acre of land, arrangements regarding sanitary matters, baths, and the rest, number of persons living in any particular property, and every other condition? If this is so—and can it be denied?—then the blame for the class of property now complained of is palpably not to be put on the builder, but surely upon the local authorities which accepted it. The private builder will build in the future, as in the past, the kind of property which the authorities' by-laws authorise; and if 100-feet wide streets and baths and electric light are now held to be necessary, then let the authorities say so, and the private builder, given the same amount of consideration, though perhaps in another form, that the authorities are to receive, will produce the finished article at least as economically as the average town or district council.

William Burges, A.R.A., possessed a very choice collection of armour, Oriental and European china, jewels and Japanese works of art, and when he died in 1881 he left to the British Museum the choice of some of his best pieces of armour. The rest remained till now in the house which he built for himself in Melbury Road, W. On Monday and Tuesday in this week the collection was sold by order of his trustees at Messrs. Glendining's gallery in Argyll Street, W. The principal items of particular interest to architects in this assembly of his belongings consisted of the various objects of personal plate which he designed for his own use, including a pair of glass wine ewers executed in 1865 in a mediæval style. These we illustrated in our issue of April 17, 1874, when we devoted a special number to Burges' works. One of the ewers is set with cameos, old coins, a jade horse, and lapis lazuli enrichments; the companion piece has malachite panels and a Chinese crystal tiger on top. The silver spouts are in the form of rams' heads, the ivory handles being figures of lions fixed to the silver frame mountings. There is a companion drinking cup of silver with a cornelian knob and an enamel plaque at bottom. Burges made a remarkable inkstand in 1863 for his library, and fitted it with a series of three pots set over each other on the back of an antique bronze elephant, and arranged to swing round on a pivot when in use independently one of the other. The upper one in Chinese green is fixed below a netsuké top of Benkei and Yoshitsuné, set out with gilt chains and beads. Burges' working detail of his inkstand was published as a double page in the R.I.B.A. "Journal," with Mr. Maurice B. Adams' paper on "Architectural Drawing," read at Conduit Street, February 2, 1885. Another piece sold on Monday is a Robin's egg blue bottle mounted from the designs of W. B. "in remembrance of Tommy Deane, his pupil," 1874, with a cloisonné enamel top. This has reference to Sir Thomas Manley Deane, R.H.A., joint architect for the public offices lately finished, in conjunction with Sir Aston Webb, R.A., in Dublin. Other effects belonging to Burges' daily service are a series of shallow silver mounted bowls for the table, forming jade and onyx trays, and an extremely rare example of antozonite variety of Blue John, a rich purple dish, also a Chinese peach crystal inkstand made up by W. B. on a Chinese dragon slab, as well as a liver-coloured Chinese bottle mounted by him in 1868. The collection comprised 446 separate lots, including a series of handsome snuff-boxes, blue and white porcelain, and mounted jewels of rare quality. Burges' collection of Albert Durer's prints, 18 in number, all very choice, and his library will be sold in the same rooms on Friday next. Some of the prices fetched were but moderate; for instance, a pair of ewers, £56; an elephant ink-stand, £22; a liver-coloured bottle, £10; and a robin vase to "Tommy Deane," £13.

SCAFFOLDS AND FALSEWORK.

Scaffold building is too often left to unskilled persons—not, of course, by builders of repute, but by those of a lower type, and by other people who know little about it and employ workmen who know less. Probably in some of our great dependencies and dominions makeshift is more often the order of the day. Evidently it is recognised there as here, and we have read with interest a very useful paper read recently before the American Safety Council by Mr. T. F. Foltz, the engineer, to the Pennsylvania State Department of Labour and Industry. We summarise some of the principal sections of the paper, believing that it will be found of value this side, especially as regards points on which practice in America differs from our own.

POLE SCAFFOLDS.

The general construction of the pole scaffold, used mostly by bricklayers, is as follows:—Poles or uprights about 4 ins. square in cross section are erected about 7 ft. 6 ins. apart on a line approximately 4 ft. 6 ins. from the wall. Stringers 1¼ ins. thick, and from 8 to 12 ins. wide, depending on the load they are to carry, are nailed on the poles in a position parallel to the ground. These are spaced vertically about 5 ft. apart, and serve as the outer bearings for the putlogs. The inner ends of the latter, having a cross section of about 3 by 4 ins. and a length of about 6 ft., rest in holes left in the brick wall.

The putlogs support the platform planks, and there should be a sufficient

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number of them so that there will be at least three under every plank. With 16-ft. planks, about 2 ins. thick and 10 ins. wide, the putlogs may be spaced the same as the uprights—namely, 7 ft. 6 ins. apart. If thinner planks are used, the putlogs should be placed closer together. The planks, with the above dimensions, will lie 5 wide in the space between the buildings and the uprights. Their ends will overlap each other 1 ft., and there should be a putlog under this point of overlapping to avoid the formation of a blind trap.

It will not be necessary to nail the putlogs or planks in position unless local conditions require that they be erected on an incline, or heavy vibration or other considerations should necessitate such a precaution. There should be a guard rail, at least 3 ins. by 1½ ins. in cross section, erected along the uprights parallel with the platform and about 34 ins. high. A similar guard rail should also extend across any window openings on the building side of the platform where these openings extend to more than 34 ins. above the platform. Below this rail, along the outer edge of the platform, a toe board about 6 ins. deep should be provided to prevent material from falling from the scaffold. If material such as bricks is to be placed on the platform in piles higher than the toe board, then the latter should be higher accordingly, or the space between the toe board and the guard rail should be filled in with boards or substantial wire screening.

In order to eliminate the possibility of the pole scaffold collapsing in a direction parallel with the walls, there should be substantial diagonal braces nailed across the uprights. There should also be braces nailed to the building at various points, such as window frames and other points of attachment, in order to prevent the scaffold from falling away from the building. On blind walls where there are no points available for nailing braces of this kind spring stays may be used. To make a spring stay, two boards are inserted in the hole in the wall left by the removal of a putlog in raising the platform to a higher level, and a brick is then placed between the two boards and pushed to within a few inches of the wall. The outer ends of the boards are then sprung together and nailed fast to the scaffold. The result is that both boards at their inner ends are pressing against the top and bottom of the hole with such force that there is sufficient holding power to prevent the scaffold from falling away from the building.

INDEPENDENT POLE SCAFFOLDS.

The design of the independent pole scaffold departs somewhat from that of the pole scaffold. Instead of using the building as the inner support for the platforms, an additional set of uprights is erected close to the building. This kind of scaffold is often used by stonemasons, as it is usually undesirable to leave openings in stone walls for the reception of putlogs. These scaffolds are usually made in larger dimensions than the pole scaffolds, and a greater amount of bracing is necessary on account of their being independent of the building for support. Instead of the usual putlogs resting upon the ledgers as in the pole scaffolds, boards about 1½ in. thick and about 9 in. wide are nailed on the sides of the uprights just above the ledgers and perpendicular to them and the building. These bearers, which correspond to the putlogs, add considerable bracing to the structure on account of being nailed fast.

This scaffold is usually made twice as wide as the pole scaffold, and larger members are used throughout on account of the greater strain upon the various parts. The method of laying flooring is substantially the same as that for the pole scaffold, and the same consideration should be given with reference to the guard rails and toe boards. Better footing is required in these scaffolds on account of a greater weight resting upon each upright. Where there is any question as to the ability of the soil to hold the pole there should be a substantial block of wood, about 2 in. thick and a foot square, nailed to the bottom of the upright in such a maner that a larger bearing area will be secured. Stones or bricks should never be used under uprights in any kind of scaffold, as they are very easily knocked from position by trucks or material bumping against the uprights.

SUSPENDED SCAFFOLDS.

Pole and independent pole scaffolds are generally used for buildings up to about six storeys in height. Above this height the construction of these scaffolds becomes a large item of expense, and there is also a greatly increased element of danger connected with high scaffolds due to the great weight coming upon the bottom uprights. On high buildings it is now customary to use suspended scaffolds, which usually consist of substantial platform planks resting upon putlogs, each end of which is suspended by means of a cable hung from an overhead beam projecting from the building. These scaffolds are usually equipped with means for raising and lowering the platforms, which consist of a machine for each cable with a drum and means of winding up the cable.

There are two principal types of these scaffold-hoisting machines: on one the winding drums are located on the platform, and on the other these drums are located on the beams overhead. Advantages are claimed for both systems, and no attempt will be made here to justify the use of one over the other. The first type is worked usually by a lever and ratchet operated directly on the cable drum on the platform; the other is operated by means of worm gears and a sheave wheel driven by a toller rope which extends within reach of the men on the platform. These scaffolds are usually provided with cables approximately 100 ft. long, and where it is necessary to work beyond this range, the scaffold is relocated to a new position above after the cable is wound up.

Suspended scaffolds should never be used without guard-rails and toe-boards on account of the great height at which they are operated. It is also advisable to fill in the space between the guard-rail and toe-board with substantial netting having openings not greater than ½ in.

OUTRIGGER SCAFFOLDS.

At certain places, such as under big cornices and other special construction, platforms are often placed upon beams thrust out from the building. These beams should be of substantial dimensions and excellent quality, and they should be rigidly fastened on the inner ends to floor beams or substantially braced against overhead beams. No dependence should be placed upon these cantilever beams being simply fastened into the wall; they should project inside of the building to some considerable distance and there be securely fastened. Guard-rails and toe-boards should always be used with this type of scaffold, and the planks should be provided with the same consideration as used for laying the planks in pole scaffolds. These scaffolds are not recommended where it is possible to use one of the other types.

CARPENTERS' BRACKET SCAFFOLDS.

With the carpenters' bracket scaffold, platform planks are placed upon brackets, which consist of horizontal and vertical members, usually about 4 ft. long, and a diagonal member to provide the necessary bracing. These members are bolted together in a substantial manner, and the bracket is placed on the building with its horizontal member perpendicular to the wall. It is held in that position by a bolt anchored at the inner end of the horizontal member, extending through that wall, and bolted on the inside. This bolt, usually about ⅝ in. in diameter, should not be simply bolted through the sheathing, but should project through a substantial block that extends across the inside of the studs.

There should be sufficient brackets in order that there may be three under each plank. Thus with 16-ft. planks the brackets should be no further apart than 7 ft. 6 ins., in order that the planks may overlap each other about 1 ft. over every alternate bracket. This type of scaffold does not adapt itself very readily to the installation of guard-rails and toe-boards. These rails and toe-boards may, however, be installed without much trouble, and where the scaffold is used more than 10 ft. above the ground they should certainly be erected. It is a very common practice to lay the platform planks upon these brackets in such manner that the points of overlapping do not always come upon a bracket. This forms a blind trap, and under certain conditions may result in a man being precipitated to the ground below, should he place his entire weight upon the unsupported point of overlapping

PAINTERS' SCAFFOLDS.

The painters' scaffold consists of a ladder-like platform having parallel sides but somewhat wider than an ordinary ladder, each end of which is suspended by a triangular stirrup. This stirrup is usually made of ⅜-in. wrought iron or steel, and at the upper or apex corner the metal is in the form of a smooth loop for the reception of the hook of the lower hoisting-rope block. The upper block of the hoisting rope is held by a large wrought iron or steel hook, about ⅝ in. diameter in cross section, which is hooked over the cornice of the building in a substantial manner. The stirrups should have appropriate brackets or the installation of guard rails as well as toe boards, and it is noted with a great deal of satisfaction that this type of scaffold is being provided with these rails more generally now than several years ago. The scaffold is raised or lowered by the men on the platform, and the free end of the rope is deftly looped under the rounded apex of the stirrup and over the hook in such manner that the platform is held in position without any further securing of the rope.

The loose ends of the rope below the fastening should be protected from injury or tampering by unauthorised persons on the ground, and it is a good plan to coil this free portion of the rope upon the platform. Projections in front of the platform, with rollers on their ends, bear against the side of the building and determine the distance that the platform shall have therefrom. Where the distance from the platform to the point of support overhead is great, the scaffold should be lashed to the building in a substantial manner in order that it will not swing away from the building

(*Continued on page 348.*)

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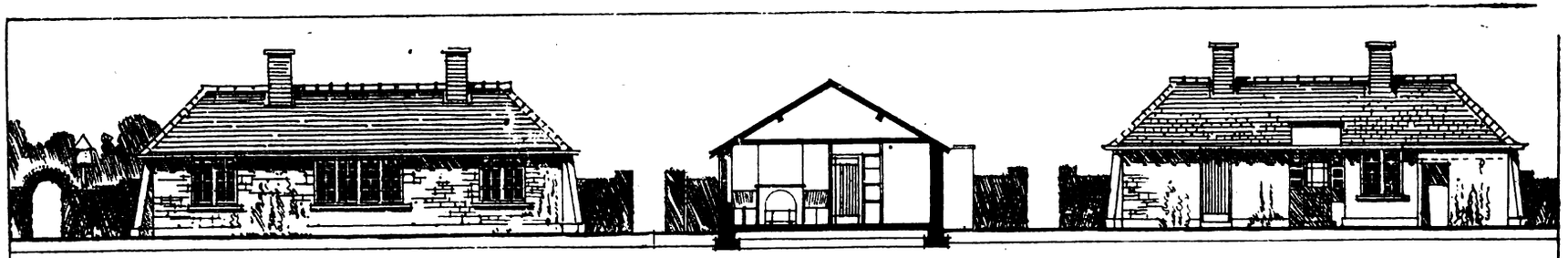
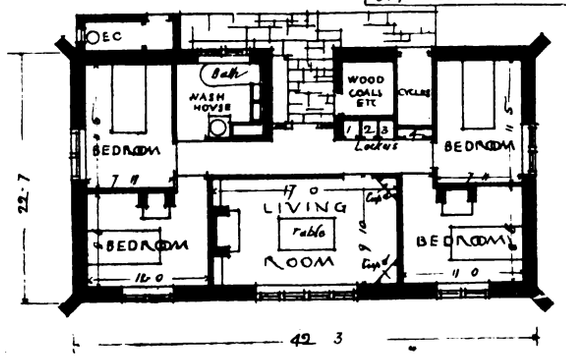


FRONT ELEVATION SECTION BACK ELEVATION

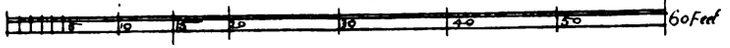
Cubical Contents 11238 Cubic Feet.
Where a supply of water can be obtained a Septic Tank System can be installed.

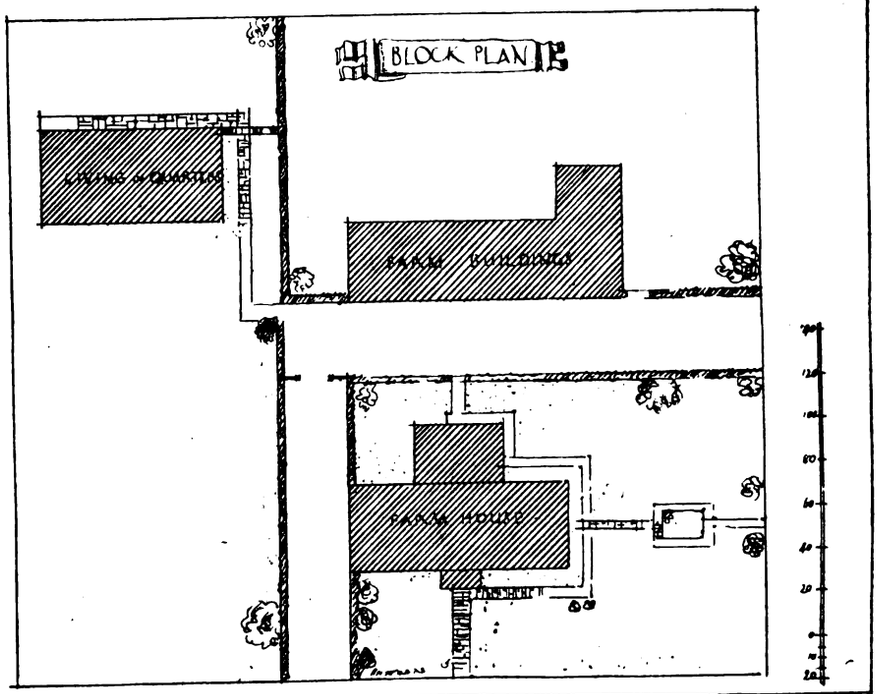
Walls: Native stone squared rubble coursed or rubble roughcasted
Suitable for all parts of Wales where stone is found, other districts brick or concrete blocks roughcasted
Roofs of Welsh slates
Floors: Concrete & tiles skirtings in cement
Yards: stone paving or cement concrete
Closets. Earth Pail Mowle Patent
Slop water on to land 50 yards away

Mowles Earth-pan Closet
NOTE. Water Store in Tank of Concrete above EC



PLAN





ROYAL NATIONAL EISTEDDFOD HOUSING COMPETITIONS. LIVING-IN QUARTERS.

PRIZE DESIGN by Messrs. THOMAS and MORGAN, Architects.

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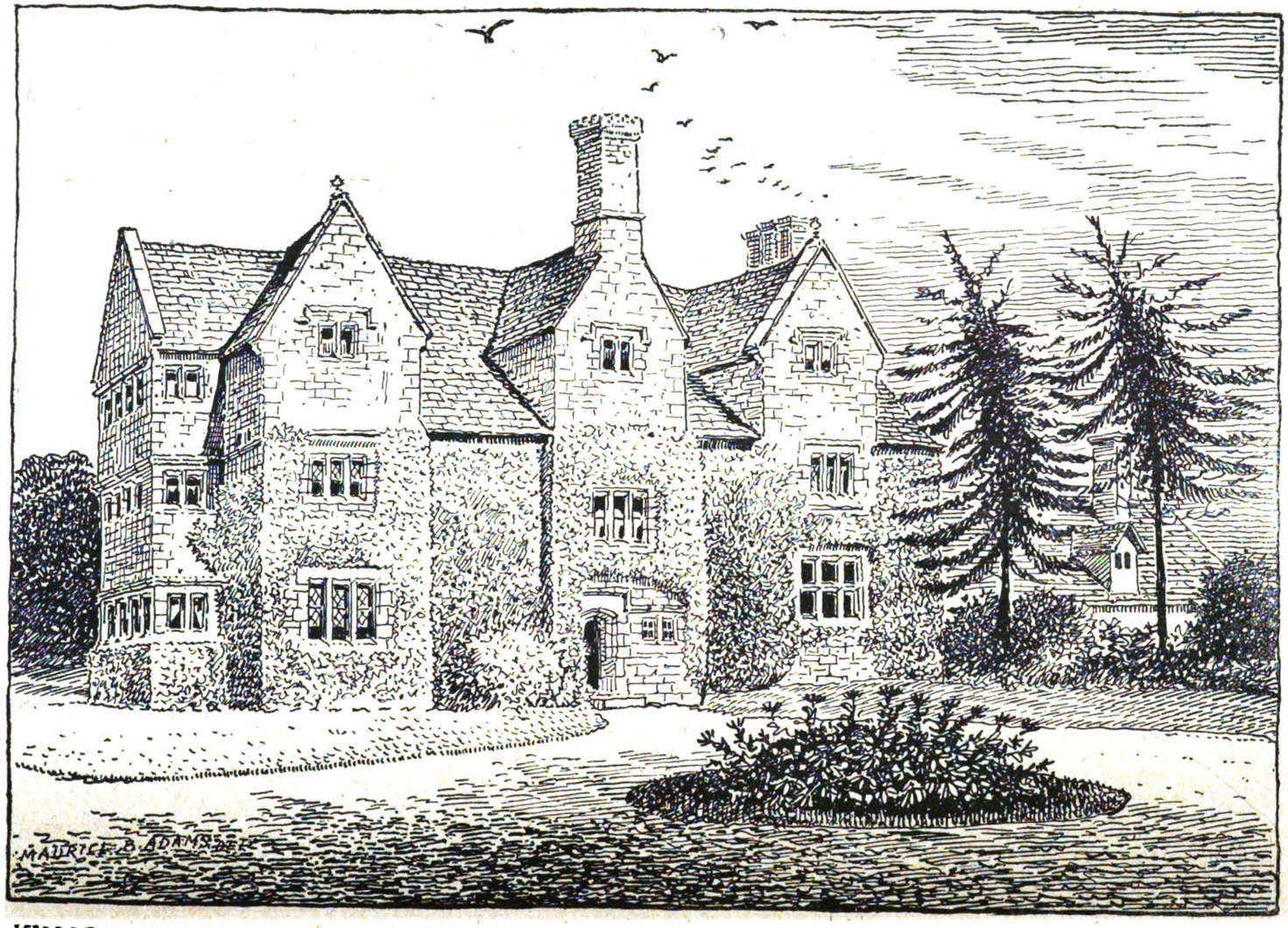

KINGS-SUTTON MANOR HOUSE, NORTHAMPTONSHIRE, NEAR BANBURY. SKETCHED BY MAURICE B ADAMS

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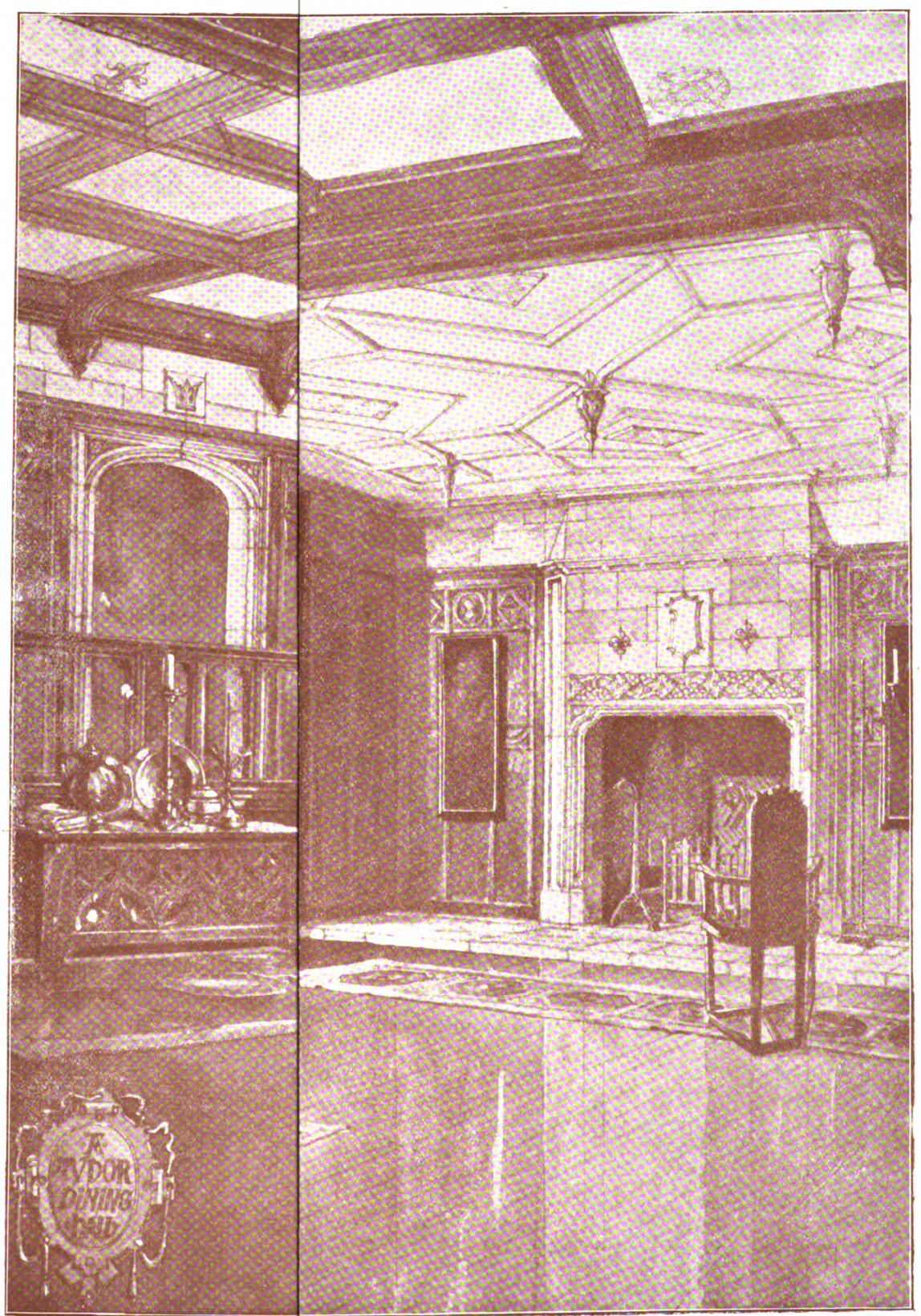

N, S.G.

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NOW IN USE AS KING-GEORGE V. MILITARY HOSPITAL.

Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, Architect.

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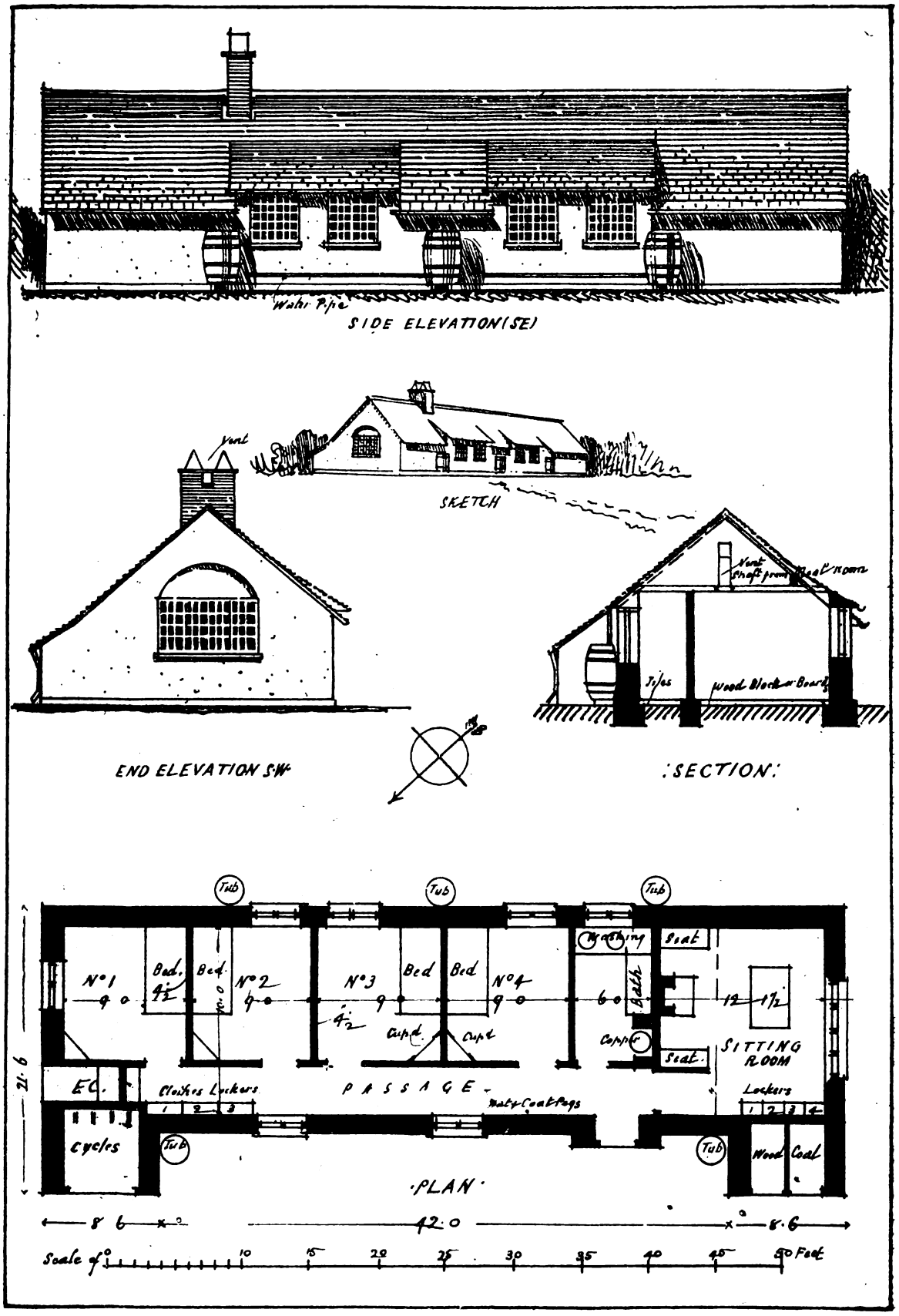

ROYAL NATIONAL EISTEDDFOD COTTAGE COMPETITIONS.

LIVING-IN QUARTERS: A PRIZE DESIGN.

Mr. HERBERT L. NORTH, F.R.I.B.A., Architect.

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SCAFFOLDS AND FALSEWORK.

(*Continued from page 337.*)

and thus present a considerable hazard to the workmen. When the men leave the scaffold for any length of time, they should either lower it to the ground, or at least lash it securely to the building in such a manner that it will not be blown about by the wind. Buckets and other tools should not be left on the scaffold, as they may fall to the ground below with possible injury to persons. No more than two men should regularly work on one painters' scaffold, and no more than three men should ever be on the scaffold at any one time. Several painters' scaffolds should not be combined by bridging the spaces between them with planks in order to cover a greater amount of the building with a small number of scaffolds.

Needle beam scaffolds are used largely for riveting steel work on buildings and for working under roofs. It consists of a plank platform resting upon two beams, which are suspended at e ch end by means of ropes. Where beams span from 10 to 12 ft. they should have a cross section of at least 4 by 6 ins.; for larger spans, larger beams accordingly should be used. Great care should be used in the pl.cing of the platform planks. The beams should be parallel, and in case local conditions require that one beam be lower than the other the platform planks should be provided with bolts in each end to prevent them sliding over the beams. It is best practice in any event to have the platform planks always fitted with these bolts placed about 6 ins. from each end. In some cases guard-rails on this type of scaffold may be a hazard instead of a help. Where the work consists of swinging a maul or a sledge, the guard-rail may promote an accident instead of preventing it.

PLASTERERS' AND DECORATORS' SCAFFOLDS.

Plasterers and decorators working on large interiors usually operate from scaffolds designed somewhat similar to independent pole scaffolds. These cover the entire floor in order that access to the ceiling may be had as well as to all the walls. For very large areas scaffolds are usually constructed around the four walls of the room, and suspended, or needle beam scaffolds are hung from the ceiling. In erecting the side scaffolds the same precautions should be taken as with the construction of independent pole scaffolds. The parts should be well braced, and the same care should be taken as to the installation of guard rails and toe boards. There is a difference of opinion as to how the platform planks should be laid overhead. Many authorities believe that it is satisfactory to permit a space of 6 ins. to a foot between the various planks, assuming that the men will not fall down through such a space. This, however, does not prevent tools or material from falling to the floor below and possibly upon persons, and it is more desirable that the platforms be built solid, particularly at the points where the men do their work. For lower ceiling heights horse scaffolds and ladder scaffolds may be used.

FALSEWORK.

A great deal of the foregoing applies to the construction of falsework. This class of construction cannot be standardised to the same extent as scaffold work, hence it will be impracticable to give in detail specifications for safe construction. Whether the falsework is erected to support a stone or brick arch, or partakes of the elaborate work used in the building of some of our modern masonry and concrete bridges and similar structures, it should in every case be given careful treatment, and be designed according to the stresses to be met. In most cases it will be necessary to make drawings giving as much detail as if the structure were a permanent one.

Only the most experienced men should be entrusted with the construction of this class of work, and propositions of large dimensions should be handled as faithfully as though the structure were going to be a permanent one. In the design and construction of all falsework great consideration should be given to the method of its removal after it has served its purpose. False centres should be so designed that, by collapsible keys or other means, they may be removed without straining or damaging the permanent structure.

Our Illustrations.

A TUDOR DINING HALL IN A COUNTRY HOUSE.

This hall has rather a nice plan, with unusual features, chiefly due to the placing of the mullioned windows and differing levels of the floors. The scheme of decoration adopted makes no pretence at being a faithful reproduction of a Tudor room. Some of the details, including the plaster ceiling, are of a more recent period in style. An archæologically correct replica of a Tudor hall would be out of character with present-day needs. The work illustrated to-day by Lieut. G. Murray Adams-Acton, S.G., from his autograph drawing was designed by him to meet special requirements in the remodelling of existing premises.

H.M. STATIONERY OFFICE, WATERLOO, NOW IN USE AS KING GEORGE V. MILITARY HOSPITAL.

This illustration is reproduced from the view exhibited at the Royal Academy this year. It shows the major part of the Stamford Street front, but not the entire length of this façade, which measures 323 feet, the total floor level provided being about eleven acres. The work was rapidly approaching completion when war was declared, and late in 1914 the War Department decided to take over the building from His Majesty's Office of Works, and temporarily adapt the whole of the accommodation for use as a military hospital for wounded men. The building is now known as King George V. Military Hospital. Mr. R. J. Allison, A.R.I.B.A., H.M. Office of Works, is the architect. We published his elevations and plans of this work when it was commenced, and at the same time a detail appeared of the Waterloo Road façade in our issue of December 6, 1912, with a full description of the building.

KING'S SUTTON MANOR HOUSE, NEAR BANBURY.

This Northamptonshire manor, on the borders of Oxfordshire, has a long history, going back to remote times prior to the Conquest. The Manor House, of which a sketch is given, is devoid of embellishment, its detail being quite plain, depending as it does on a simple treatment of gables. The residence stands on the south side of the churchyard. Its bold, unpretentious character depends entirely on good proportions and the symmetrical arrangement of square-headed mullioned windows and a skyline of gables. This symmetry is departed from on the other front, where the grouping is diversified, the gables being set on the return faces of the projections as well as facing the entrance gateway. The staircase, like the other woodwork inside, is excellent, and in some ways exceptional. The stone walling has weathered well, and the style is comparatively inexpensive and well worthy of adaptation, so solid and charming, being free of all fussiness.

ROYAL NATIONAL EISTEDDFOD COTTAGE COMPETITIONS — LIVING-IN QUARTERS—PRIZE DESIGNS.

In our issue of October 9 we published the prize designs for cottages Classes A and B, with block plans complete. The first-named was designed by Mr. I. A. Hallam, and the second by Mr. H. Heathman. A general brief description appeared in the same issue. To-day we give two sheets of prize designs for the living-in quarters. The first prize in this class was accorded to Messrs. Thomas and Morgan, and the particulars included on their sheet of plans supply all the essential information. The block plan gives the allocation of this housing in regard to the farmhouse and buildings. Mr. Herbert North, F.R.I.B.A., is the architect of the other prize design.

Correspondence.

PROPOSED FEDERATION OF ARCHITECTS, ETC., NOW ENGAGED TEMPORARILY IN GOVERNMENT OFFICES.

To the Editor of THE BUILDING NEWS.

SIR,—If "Zero," in his letter in your issue of November 6, means by "comfortable temporary jobs" that they were comfortable as compared with most of those in the Army, no one would dispute the matter, but it is evident he considers a Government office as a kind of home of rest. Those who were privileged to serve their King and country during the great war by employing their trained knowledge in the best way possible can assure those who, too proud to accept subordinate positions at low salaries, were trying "to carry on at home without Government assistance" that they have never before had such a strenuous time as in the Office of Works. Rather than to try and carry on without Government assistance, it was surely everybody's duty to try to assist the Government.

"Zero," in his well-considered scheme for the removal of temporary Government officials, forgets that by so doing there will be more amongst whom the work for which he hungers will have to be distributed.

Whether "Zero" is merely camouflage for a nonentity or not, it is evident that his letter is liable to create a false impression, the significance of which that "gentleman" possibly hardly appreciates. With the object of removing this as far as possible this letter is written by

ONE WHO KNOWS.

Grimsby's war memorial will be a convalescent hospital on the seashore, a site having been given by Lord Lincolnshire and the Hon. Rupert Carrington.

It is proposed to carry out extensions at the Municipal College of Technology, Manchester, including new laboratories, a foundry, and a boiler-house.

At a meeting of the committee of the newly-formed Anglo-American Society, held last Wednesday at Westminster, Lord Weardale presiding, it was resolved that the first act of the society should be to arrange for the erection of the statues of Washington and of Lincoln, already offered to this country from America, and, further, to invite President Wilson to honour the society by allowing them to arrange to have his statue, by an eminent sculptor, set up in London simultaneously, as a memorial for all time of his distinguished services to humanity at the time of the great war

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COMPETITIONS.

THE SCOTTISH HOUSING SCHEME.—The Scottish Local Government Board have authorised the Scottish Institute of Architects to arrange a competition among architects desirous of submitting designs and plans for the houses proposed to be built for the industrial classes in Scotland. The competition will be open to any British subject and is divided into three sections, the first two for lay-out plans accompanied by designs of the types of houses described, and the third for the design of cottages for rural areas without a lay-out plan. The selection of designs will be made by a Committee of Selection consisting of five members appointed by the Local Government Board, three of whom—Sir John J. Burnet, Mr. A. N. Paterson, and Mr. J. M. Dick Peddie—have been chosen from a list of architects submitted by the Institute of Scottish Architects, and the remaining two—Professor S. D. Adshead and Mr. James Thomson—from among persons having special experience in town planning. A panel of architects whose designs are approved by the committee will be formed, and a list of the names on the panel will be furnished to local authorities preparing housing schemes, with a recommendation from the Local Government Board that architects from the panel should be appointed to advise in carrying out such schemes. To the names will be added, in consultation with the Institute of Scottish Architects and subject to the approval of the Committee of Selection, the names of architects considered qualified who have not taken part in the competition owing to the fact that they are at present serving in H.M. Forces or for other reasons. Premiums to the total value of £725 will be awarded by the Committee of Selection for the most meritorious designs submitted, and the Local Government Board may publish the premiated designs and plans and—subject to the author's consent—the designs and plans of all other competitors placed on the panel, and be entitled to exhibit publicly the designs and plans (or any of them) of competing architects whose names are placed on the panel, with the names and addresses of the authors. Premiums of £125, £75, and £50 are offered for the lay-out of a housing scheme on a given area with houses shown in block, accompanied with designs of houses of the types as described; premiums of £100, £60, and £40 are offered for the lay-out of a housing scheme of tenement houses on a given area with houses shown in block, accompanied by type designs for the tenement blocks; premiums of £40 and £25 are offered for the design of a cottage of one story containing living room, scullery, and two bedrooms; while, in addition to the premiums offered in the three sections above mentioned, a sum of £210 will be divided in premiums among competitors as the Committee of Selection may determine, but no such premium shall exceed £20. All houses shall have, in addition to the prescribed accommodation, a larder, coal store, and cupboards, and shall be designed for a cold and hot water supply with a fixed bath and water closet.

The L.C.C. has approved the sites for 200 houses, and the Crook U.D.C. has decided to invite architects to prepare building schemes.

The Burgess Hill U.D.C. has authorised the surveyor to carry out the necessary work to convert the stable at the rear of the council offices into a mortuary.

The death is announced of Mr. T. Butler Gould, who for the last four years was master of life painting at the York School of Arts and Crafts. He was only thirty-five years of age. At the Royal Academy he was a regular exhibitor of portraits.

The library of the Society of Biblical Archæology (now amalgamated with the Royal Asiatic Society) was dispersed by auction and realised a total of just over £600. The chief purchasers included the Royal Asiatic Society, the London Library, and Mr. Quaritch.

A number of influential men are interesting themselves in a proposal to build a Temple of Hygiene in the centre of London to afford better facilities to the Institute of Hygiene to prosecute its work and be a lasting and practical memorial to our great victory and peace.

Our Office Table.

The Scottish Ecclesiological Society held its first meeting of the session in St. Cuthbert's Hall, Edinburgh, on November 9. The Rev. Professor Cooper delivered a lecture on Elgin Cathedral. He spoke of the memorials which would be erected to the memory of the noble men and women who had given their lives in the cause of liberty and truth, suggesting that no better tribute could be paid to them than by restoring from their desolation the ancient cathedrals and churches of the land. He pointed out that of the fourteen Scottish cathedrals, seven were now entire, while three more were partially in use as parish churches, and four only in ruins. These four, from their history, made a strong appeal to patriotic and religious feelings, and he hoped to see them restored. Dr. Cooper proceeded to sketch the history of Elgin Cathedral, alluding to its burning by the Wolf of Badenoch and its subsequent rebuilding, its gradual decay, and its position to-day as the ruin of the most beautiful structure Scottish art could produce.

The calculation of the strength of continuous arches in bridge construction where such arches are supported by what the author terms elastic piers—that is, piers of small cross section—has become of great importance to the practical engineer since the use of reinforced concrete for such structures became so common. From the purely theoretical standpoint the problem has been solved, but the method is troublesome and as a rule in actual practice the piers are assumed as rigid and each arch treated as though rigidly supported. In this article the author puts forward a method of calculation which, while taking into account the elasticity of the piers, is in his opinion much simpler for practical use than the theoretically correct method. The results obtained by his method are said to differ very little from those obtained by the more tedious process. The method of calculation fills nearly eight pages in two consecutive issues of "Schweizerische Bauzeitung." Sept. 21, 28, 1918, and is illustrated by drawings and stress-strain diagrams.

Since the outbreak of the revolution in Russia, public attention has been directed to the destruction which has threatened or actually befallen, works of art in that country. The Victoria and Albert Museum contains a number of reproductions of objects in the principal Russian collections, and opportunity has been taken to arrange a special exhibition of them in the east hall of the Museum. The exhibition consists of facsimiles of plate, both secular and ecclesiastical; water-colour drawings by Nicolas Martinoff of important pieces of Russian craftsmanship; photographs of paintings by great masters, and other illustrations of some of the treasures known to be in Russia before the war. Prominent among the exhibits is a group of electrotypes of English plate of the sixteenth and seventeenth centuries. Embassies to Russia were frequent during the reigns of the Tudor monarchs, and as each was accompanied by gifts of plate and other works of art, Russia became possessed of some of the finest examples of English goldsmith's work. Russian plate includes groups of the two characteristic native vessels—the bratina and kovsh, the former a kind of loving-cup, the latter a ladle for serving liquid. Church plate is represented by several interesting pastoral staves of the tau shape; two splendid censers in the Troitsa Monastery, near Moscow; a marriage crown, and a rich panagia for carrying the Holy Sacrament to the sick.

The trustees of the British Museum are considering the reopening those parts of the Museum which have been closed during the war, and of bringing out the treasures which have been stored in the basement. This may take some time, however, as one wing of the building is being used as the offices of a Government department, and many of the exhibits are heavily sandbagged, and labour for uncovering them is not yet available. The National Gallery and the National Portrait Gallery are largely occupied at present by Government departments, and it is said that the work of redecoration and clearing cannot be begun for some little time. It will, it is stated, be six months before the galleries are in proper order and the pictures, now in store, reframed and rehung.

The characteristics of paving bricks from blast-furnace slag depend more on the manner in which the slag is cooled than on its composition. The following process is recommended by J. B. Shaw in Trans. Am. Ceram. Soc.:—The slag from the furnace is poured into a tilting frit-furnace and any additional material (such as 10-20 per cent. of silica or iron oxide) required to bring it to a desired composition are then added. The mixture is brought to a quiet fusion, and run into moulds. The moulds with their contents are immediately placed in an annealing furnace at the softening temperature of the bricks, and are maintained at this temperature until the bricks are uniform throughout; or the bricks are buried in sand. The rate and mode of annealing are of great importance and determine whether tough, good bricks or brittle ones are produced.

All ranks of the Royal Regiment of Artillery wish that the comradeship and sacrifices of the regiment in the great war should be worthily and lastingly commemorated. The following scheme, of which the King, Colonel-in-chief, has approved, has therefore been proposed:—(1) To establish a permanent fund, to be administered by a committee elected from all branches, for the benefit of all ranks of the Royal Artillery and of their families and dependents; for the assistance of those who have suffered through the war, and for the promotion of the welfare of the regiment by helping financially and educationally the children of all ranks. (2) To establish a Royal Artillery centre in London in a suitable building, which should include the existing R.A. Institution and Library, and provide accommodation for a museum of trophies of this and former wars, and an office for the administration of all regimental funds. This will be a permanent centre for all ranks, enabling old comrades in arms to keep abreast of the progress of the regiment and to renew friendships founded during the great war. To carry out these proposals at least £500,000 will be required. It is therefore hoped that everyone who is in any way connected with or interested in the Royal Artillery will assist. All donations should be sent to Messrs. Cox and Co., for "The Royal Artillery War Commemoration Fund." The Hon. Secretary of the Fund is Colonel Wilford N. Lloyd, 22, Sussex Square, Brighton.

Architects and craftsmen employed at the Office of Works have organised a Sketch Club. The first exhibition of work by the members is now on view at the office.

Mr. Duncan Clark, A.R.I.B.A., of Colchester, a member of the Surveyors' Institution, has been appointed architect and surveyor to the Archdeaconry of Colchester.

Mr. John J. Connolly, engineer to Monaghan D.C., has been appointed by the Monaghan C.C. to the position of assistant county surveyor for Castleblayney rural district, in room of Mr. W. M. Rutherford, now town surveyor in Lurgan.

The First Commissioner of Works, replying to Sir H. Craik on Thursday last, said: No proposal for a permanent memorial in Hyde Park to those who have fallen in the war has yet been submitted to me. Any such scheme could only be carried out at the public expense and with the approval of Parliament, subject to the gracious permission of His Majesty the King, the Ranger of the Royal parks.

A certain learned institution in London, says the *Guardian*, much affected by high ecclesiastics of an antiquarian bent, is housed in a Georgian mansion possessing a remarkably fine Adam staircase, lighted by a cupola, and adorned with marble busts of the Roman Emperors. During a recent severe storm the glass of the cupola was broken and torrents of rain descended upon the staircase. "I hope the busts have not suffered?" a Bishop said to the porter the following morning. "Only that old Crackler, my lord." "Crackler?" queried the Bishop. "Yes, 'im," the porter replied, pointing to a bust of Caracalla, disreputable with a blackened eye and the marks of sooty water.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

BALLYSHANNON.—For repairs to labourers' cottages, for the rural district council:—
Daly, P. (accepted) £53 5 0

CHELMSFORD.—For the provision and installation of a boiler in connection with the heating apparatus at the public library, museum and science and art school in Market Road, for the town council. P. T. Harrison, A.M.I.C.E., borough engineer:—
Christy and Morris, Broomfield Road, Chelmsford £108 10 0
Dennis, F. H., High Street, Chelmsford* 89 0 0
*Accepted.

HENDON. — For repairs to the isolation hospital, for the Hendon Rural District Council:—
Stonebridge (accepted) £33 15 0

REDDITCH.—For extension of the electricity works, for the urban district council. Handcock, Dykes, and Trotter, 11, Victoria Street, Westminster, S.W., consulting engineers. F. F. Bayliss, 18, Unicorn Hill, Redditch, architect:—
Extension of engine and boiler-house, C. G. Huins and Sons, £4,195; ferro-concrete work overhead and coal bunkers, ash tunnels, etc., £3,859 7s. 6d.

REETH.—For work in connection with the re-arrangement of the Reeth upper sanitary system, for the Reeth Rural District Council. Accepted tenders:—
Cutting pipe track and laying pipes, E. Pedley, 9s. 8d. per rood; supplying pipes, E. Bagshaw, £50.

STRONE POINT AND BLAIRMORE (ARGYLLSHIRE).—For repairing seawalls and roadway at Strone Point and Blairmore, for the Cowal District Committee:—
Paton, A., and Sons, Alexandria £229 15 0
M'Kelvie, T., Strone* 185 10 0
*Accepted.

LIST OF TENDERS OPEN.

BUILDINGS.

Nov. 22.—Shelving for 6,000 books at Newtown, Montgomeryshire.—For the Montgomeryshire Village Circulating Library.—Plan and specification on application to Mr. L. Phillips, clerk to the Education Committee, County Offices, Newtown. Tenders by November 22.

Nov. 22.—Reconstruction of the single-floor transit shed (Shed "A"), situate on the east side of Avonmouth Dock, Bristol.—For the Docks Committee.—The Secretary of the Docks Committee, Docks Office, 19, Queen Square, Bristol.

Nov. 22.—Masons', joiners', and plumbers' work in connection with mortuary alterations.—For the Guardians of Dewsbury Union.—Specifications, bills of quantities, etc., from the architects, Messrs. W. Hanstock and Son, Branch Road, Batley.—Tenders to C. P. Pickersgill, Clerk, Union Offices, Wellington Street, Dewsbury.

ENGINEERING.

Nov. 23.—Supplying and fixing hot-water installations to Child Welfare Centre, Moss Cottage, Chorley.—For the Chorley Corporation.—Borough Surveyor, Town Hall, Chorley.

SANITARY.

Nov. 28.—Various works and materials required in the excavation for and laying about 160 yards of 9 in. earthenware pipe sewer, manholes, etc., at Askham Bryan, Tadcaster.—For the Tadcaster Rural District Council.—Specification and particulars from H. C. Wood, sanitary surveyor, Tadcaster. Tenders to G. A. Bromet, Clerk, Tadcaster.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

PAINTING.

Nov. 22.—External painting at the Carlisle (Abbey Street), Cockermouth, Lazonby, Silloth, Whitehaven, and Wigton police stations, and at Earl Street offices and stores, Carlisle.—G. D. Oliver, F.R.I.B.A., County Architect, Carlisle.

CHIPS.

Mr. Henry Pennington, the new Mayor of Bootle, is the Earl of Derby's land agent for the extensive Bootle properties of his lordship.

Mr. James Bray, advisory surveyor to the St. Thomas Rural District Council since 1866, died recently. He was formerly surveyor to the Wonford Highway Board, and subsequently to the St. Thomas Rural District Council.

Sir Howard Frank, K.C.B., has been appointed by the Ministry of Reconstruction Vice-Chairman of the Advisory Council on the Disposal of Surplus Government Property, and Capt. Sir Neville Stanier, M.P., has been chosen a member. The Hon. E. G. Strutt has been selected to serve on the Rural Development Section of the Advisory Council of the Ministry of Reconstruction.

Sir Francis Newdigate-Newdegate, Governor of Tasmania, has offered Astley Castle, an historic house from which the Duke of Buckingham was taken for execution by Richard III., as the Episcopal residence of the new See of Coventry. The Bishop, however, has declined it, believing that he ought to live in the midst of the industrial population in Coventry, if he can find a house there.

"Work and Wages," by Prof. Sydney Chapman, with introduction by Lord Brassey, 494 pp., 5s. "The Problem of Existence," by M. C. Mallik, 5s. "Life and Letters of George Jacob Holyoake," 2 vols., over 700 pp., 7s. 6d. "Henry George the Orthodox," by R. S. Moffatt, 4s. "Industrial Democracy," by Sidney and Beatrice Webb, 2 vols., 10s. "Man Considered in Relation to God and a Church," by W. Carew Haslett, 4s. "Religion for All Mankind," by the Rev. Charles Voysey, 2s. "Life of Frederick Denison Maurice," by his son, Frederick Maurice, 2 vols., 10s. "The Decay of the Church of Rome," by Joseph McCabe, 5s. "Problems of Modern Industry," by Sidney and Beatrice Webb, 5s. "The Revolution of the Twentieth Century," by Henry Lazarus, 5s "From Bondage to Brotherhood," by J. C. Kenworthy, 2s. "The History of Co-operation," by G. J. Holyoake, 610 pp., 5s.—Strand Newspaper Company, 1, Arundel St., Strand, W.C.2.

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Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

Government Housing Scheme, Well Hall Estate, Woolwich. Photographic views, elevations and plans of some of the houses in Rupert Road, Rossway, and Well Hall Road. Sir Frank Baines, C.B.E., M.V.O., H.M. Office of Works, Architect.

War Memorial Narthex Screens to be erected in the Municipal Parish Church of St. Paul, Broadway, Hammersmith, W. Mr. Maurice B. Adams, F.R.I.B.A., Architect.

Detail of Billiard Room Bay Window, south front of Putteridge Park, Bedfordshire. Plans, elevations, and section. Messrs. Sir Ernest George, R.A., and A. B. Yeates, FF.R.I.B.A., Architects.

Brigstock Manor, Northamptonshire, and Sketches at Ledbury, Herefordshire, by Mr. Maurice B. Adams, F.R.I.B.A.

Currente Calamo.

The unanimity of the Coalition candidates is marvellous, and the puzzle as to what they are pledged to when the next Parliament meets is perplexing! The one thing that seems certain is that our four million fighting men abroad are to be excluded from any participation as far as public expression of their opinions goes, and that at least half of them will not be able to vote at all. Hardly less disquieting is the eagerness of the politicians of all shades of opinion to insist that all are to pull together, in treble harness, to realise the promises made in Mr. Lloyd George's vague speech last Saturday at Wolverhampton, in which he pledged himself to all in turn apparently in the same fashion as the American candidate who, as Artemus Ward recorded, insisted, when catechised, that he was sure he agreed with the persistent voter because he had never met with one with whose sentiments he didn't! Even the *Times*, which has done its best to rush the General Election, confessed last Monday that "confusion grows daily worse confounded in some constituencies, and in many of them it seems certain that the successful candidate will be returned by a minority of votes." That apparently is what the Coalition Caucus wants. Meanwhile, Mr. George is still a Home Ruler and a supporter of the claims of Ulster. He is, at the same time, a Free Trader and in favour of Imperial Preference. His blandishments to Radicals are claimed by the *Morning Post* as a capitulation to Tory Protectionism. And with all this exuberant "unity" we have not a word about Housing, not a syllable about the pledges which Mr. George and Mr. Asquith gave long ago that the fatal financial legislation of 1909-10, which has crippled our own industries only in a less degree than the war, and long before that supervened, shall be repealed. One thing is pretty certain: the new Parliament will not last long. What will follow? To-day the electors are muzzled. Will they always endure these Prussian tactics?

The first exhibition held by the Office of Works Sketch Club was opened on Monday in the Conference Room, new Government Buildings, Storey's Gate, S.W., and the show closes to-day. The exhibits, including water-colours, oil studies, and black-and-white drawings, as well as etchings, numbered about 270 examples. The collection is well worthy of the occasion. The exhibitors are all members of the Office of Works staff, but many hold this position in regard to temporary work necessitated by the war. The standard of merit of the exhibits is largely due to the hon. secretary, Mr. George P. Bankart, whose water-colour of the old group of tiled houses breaking down in picturesque irregularity towards the water's edge at Whitby is one of the best pictures in the gallery, with the winding chalk path in the foreground. Close by is another excellent sketch by Mr. A. J. Pitcher of some old cob-built cottages roofed in thatch, known as "Bayard Dairy Farm," and appropriately rendered without undue effort. A brilliant pen-and-ink drawing by Mr. T. Frank Green of Morden College, Blackheath, exhibits a familiar subject in a fresh manner. Miss Bertha Golding shows a small coloured study of the staircase in Bosham Church, Sussex, and her work merits praise. The Countess Weir Bridge over the Exe by Mr. Sydney Newcombe is handled in a sober way without loss of bright effects and the value of perspective. His interior from Cannes, France, suffers from hardness, quite Dutch-like in its precision. The church at Godshill, Isle of Wight, illustrated by Mr. H. L. Robinson's water colour, suffers from the bad light due to its position on the screen, and for the same reason we were unable to gauge the relative values of his view of the Cloisters at Westminster. "Old Bexhill," showing the church grouping so well in the distance over the meadows, is by Mr. Arthur Young. The Church Gate Farm, a quaint timber house at Smarden, Kent, is strikingly delineated by Mr. T. Frank Green, though the tiled roofs are murky in colouring without light and shade. Mr. Sydney Newcombe's best contribution is the ivory-toned water colour of Edward the Confessor's tomb, extremely careful in drawing without loss of breadth of effect. Mr. Christopher Shiner is an etcher of good quality, and his Renaissance doorway of the Palace de Conté, Avingdon, is an evidence also of capable figure drawing. His interior framing of the roof of the Yarn Market at Dunster is well shown, and we noticed a study by Mr. A. F. E. Poley of the demolished Court Lodge at Udimore, but this seems hardly to do that quaint old place sufficient justice. Mr. Norris Viner's Portal of Rheims Cathedral is much too heavily handled in colour. The Commandery at Worcester is represented by a capital pen drawing of the Minstrels' Gallery at the end of the Hall by Mr. A. J. Pitcher. Mr. R. H. A. Adams shows a charming view of Cologne Cathedral seen in the distance in outline against the sky.

A moribund House of Commons rushed through a deal of needless legislation last week, some of which might and should have been left to the new Parliament—notably the Ministry of Munitions Bill. Mr. Kellaway confessed when moving the second reading that originally no one anticipated the extent to which it would be necessary for the Ministry to direct existing industries, and foster and create new industries. He might have added that in most instances the "direction" had done infinitely more harm than good to all but the profiteers and their quondam allies, the officials of the Munitions Ministry. So it will be with bricks, which are to be the chief victims, it seems, of the extended "control" it is sought to enforce. Mr. Kellaway was informed that the supply was only 50 per cent. of the demand. During recent months every brick that had been made in this country had been directed to specific war purposes, very largely for the building of aerodromes. As there was now this limited supply and this greatly increased demand, it was essential that the powers relating to the production of this particular commodity should be for a time continued and directed to purposes which would be in the permanent interests of the country. With a demand which was double the supply, unless some means were taken to see that the bricks produced were used to the best advantage of the nation they would go simply to those who were prepared to pay the highest price. We discredit Mr. Kellaway's information, and, bearing in mind the "highest price" to which all previous "control" has lifted building materials, we do not believe that buyers and sellers would be any worse off, but better; or that anybody would have suffered if things had been left to take their natural course, and we advise all con-

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cerned to make this a test question at the coming General Election.

The Select Committee on National Expenditure, in their tenth report, state that, in common with other establishments which have had to provide at short notice for the maximum possible output during the war, Rosyth is under many difficulties so far as labour is concerned, owing to the absence of adequate housing accommodation. A large housing scheme is being carried out, under which some 1,600 houses have been erected or are in course of erection. The most usual type of house (of which there are about 1,300) is that containing a living-room, three bedrooms, bathroom, and scullery, for which the workmen pay rents varying, according to the size and position of the houses, from 7s. 3d. to 9s. a week, in addition to local rates and payment for gas or electric light. The cost of constructing houses of this type has increased consistently as the war has gone on, and, whereas the cost of the earlier houses ranged from £250 to £280, the cost of those recently erected or still under construction is estimated to range from about £490 to £580. But even when completed there will be an insufficiency of houses for the permanent needs of the establishment, with the result that the special arrangements at present in force for bringing large numbers of the workmen daily from a distance will doubtless have to be continued. This is not satisfactory, and, in spite of the fact that the war has made the cost of all buildings unprecedentedly high, it seems most desirable that accommodation should be provided locally for the permanent dockyard staff. While wages remain at their present high level the staff ought to be able to pay an economic rent. At the time of the Sub-Committee's visit in August, 1918, the average wage appeared to exceed £4 16s. a week for each person, including women, employed in the yard.

The question whether railway companies carrying goods are common carriers at law is one of much business importance to all builders and contractors who have to deal with building materials. It is too generally supposed that the railways, in regard to the carriage of goods, are in every way legally liable as carriers. But it seems to be clear that this is not so, and the point has now been expressly decided by Mr. Justice Roche in the recent case of "W. R. Smith and Sons v. London and South-western Railway." The plaintiffs dealt in glue, bones, etc., and ever since 1857 they had been sending their goods by the defendants' railway on their own consignment notes and at ordinary rates. In March last they tendered a quantity of glue to be carried by the company as hitherto, which the railway declined to accept for carriage. The present action was brought by the plaintiffs to recover damages for the defendants' wrongful refusal to carry their goods. The whole issue turned upon the point as to whether or not the company were common carriers at law, for, if they were, they could not legally refuse to carry these goods if they had the means of so doing, and were paid the carriage. From the facts it appeared that the defendants in February last had issued notices saying they would only carry goods upon notes in a special form containing many strict conditions limiting their liability. In truth the railways were trying to get out of the law of common carriers by making their customers agree to oppressive terms to get their goods carried. The judge held that the companies, under their Acts, were not bound to act as common carriers, and if they did carry they were only obliged to give reasonable facilities under the Railway and Canal Traffic Act, 1854. Although they had for many years acted as common carriers of the plaintiffs' goods they had, by their notice of February last, withdrawn from that position and now stood on their legal rights. So the action failed because the defendants were not bound to carry the goods tendered, and could rightly refuse to do so unless their conditions were accepted. But there is pretty certain to be an appeal, when the whole of this serious question will be fully gone into.

The Committee on War Damage has now furnished the Board of Trade with a series of figures which, far from complete, enable one to gauge the extent of the damage caused by enemy aircraft and the total premiums paid to the State Insurance Office. In fifty-one municipal districts which have sent returns, at least 488 persons have been killed and 1,014 injured, and the estimated cost of making good damage to property exceeds £677,000. These, and thirty-one lesser authorities, have paid altogether £132,000 for the insurance of their own properties. Evidently the money the State has received from insurers is amply sufficient to make good all losses, whether insured or not. Surely, since those who inflicted the damage are now to be compelled to pay for it, there is no longer any excuse for withholding compensation from every sufferer, in purse or in person. The return of premiums should also be made by the State at once if Mr. Lloyd George's pledge more than a year to do "justice" is to be redeemed. Their retention would be as great a scandal as some of the "lapsed" policies of some of the industrial assurance concerns, the premiums on which go to swell big profits and pay big salaries to their officers.

GOVERNMENT HOUSING SCHEME: WELL HALL ESTATE, WOOLWICH.

(With Illustrations.)

Little excuse is needed for referring once more to the Government Housing Scheme at Well Hall, particularly in view of the vital importance which the question of housing is going to assume in connection with the work of reconstruction to be undertaken by the new Government. From the housing debate which took place on October 28 upon Mr. Hayes Fisher's "little" Bill, it will be seen that Parliament is very much alive to the importance of the whole question of housing, and the necessity of more drastic action being taken than appeared to be suggested under the limited provisions of the Bill. The generally accepted estimate of the number of houses required varies now between 500,000 and 1,000,000. The Government appear to think that the vast majority of these houses will have to be completed within a year.

Architects alone are really in a position to appraise the magnitude of the problem to be faced. Politicians and local authorities are certainly not in such a position. The Local Government Board are not above criticism, having regard to the powers acquired under various Acts for the provision of housing for the working classes, and the technical Press must do everything in its power to lead enlightened public opinion towards the right course of action with regard to the housing question.

As an example of the way housing should *not* be done, the Admiralty, in connection with their shipbuilding schemes at Chepstow and at Rosyth, have carried out schemes without due consultation with architects; as a consequence these schemes have been very seriously criticised in the local Press, while the Local Government Board memorandum on the Housing of the Working Classes Acts is castigated in no uncertain manner by a writer in the current number of the "English Review." All architects should read this article, as it is full of wise saws as to how housing should *not* be done, and how advice should *not* be given with regard to the method of tackling this problem.

The reasons for the attacks are generally not far to seek, viz., that certain Departments have undertaken work for which they are entirely unfitted. The cobbler is not sticking to his last, the specialist is not engaged upon the problem to which he is most suited.

The housing problem is admitted by everyone who has ever had connection with it to be an extremely difficult one, peculiarly susceptible to failure in many ways. It is like a set chess problem. The right moves are few, and the wrong moves innumerable. It is a problem circumscribed within very narrow limits, and, under the present conditions of stringency of building material and high cost of construction, the problem is one which might well strike terror even to the highly initiated. Not so the local authorities and the Local Government Board. They step in where even the architectural "angel" endeavours to walk delicately.

It is, however, more than ever necessary for the architect to be called in to deal with this question. The scheme is so huge that it may well change the face of England, while the character of domestic architecture may receive some stamp of genius which would bring these glorious times into keeping with their greatness. The opportunity is vast, and the conception should be equally vast. The public are not prepared to see acres of bricks and mortar sprawling anew over the face of our suburbs and countrysides without design and without charm. Therefore, every technical paper with any influence upon public opinion should act as a voice crying in the wilderness of uninstructed opinion and should labour the essential point that such a problem as this can only be adequately dealt with by those who have been proven in the past as not wanting in efficiency and exact technical knowledge and architectural quality.

The present scheme of the Local Government Board, outlined as it has been in innumerable deputations and debates, has not brought forth anything very magical in the way of results. 300,000 to 500,000 houses are required—9,000 houses have been approved by the Local Government Board, submitted by 84 local

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authorities in England and Wales. Out of 1,800 local authorities, this is a very meagre measure of success, and the Local Government Board is scarcely to be congratulated upon it. Can it be said that the Local Government Board has really directed its energies to getting an efficient scheme in being from such a result. In the debate on the second reading of the Housing Bill, that "little" Bill which appeared to excite the derision of the House of Commons, Mr. Rowntree stated that in his belief the need was so urgent that we must turn to the State itself. It is to be hoped, however, that the effort of the State will not be such as is reflected in the Local Government Board's Memorandum now alluded to. This Memorandum appears to have been prepared with a view to qualifying local authorities as inspired architects by the simple process of reading four pages of foolscap and the study of twelve plans. Architects are not made, even by such thorough methods of education! Architects must certainly have their say in the matter, and the design of at least the major portion of the great scheme which is now before the country must rest with them.

The best course is perhaps to refer again and again to housing schemes which have been developed under the stringent and difficult conditions of the war, and which authorities universally combine in appraising as of the highest order. The Government Housing Scheme at Well Hall has met with the highest praise both in this country and from its allies. Particulars of the scheme have been sent to America, Scandinavia, Belgium, France, and indeed many other countries. Propaganda work in neutral countries has been carried out by the showing of films taken of this great Government scheme, and it is universally recognised that the standard set by H.M. Office of Works in this and other schemes carried out by them is such as to give a very valuable guide as to what should be done.

The estate comprises ninety-six acres of land, of which sixty-four acres are on the east side of the Well Hall Road and thirty-two on the west side. The new roads giving access to the houses are set out to suit the contours of the ground, while special care has been taken to arrange the grouping of the houses—which number roughly twelve to thirteen to the acre—in such a way as to present a typical village scene. The lines of the roads and passage ways comprise the most pleasant sweeps and curves, there being no civic building such as a great hall or church to dictate a geometrical lay-out. The lay-out might be called a geographical one, following the lines of the natural features, preserving every tree and even hedgerows in some cases, and the eye is always contained within the limits of the actual boundaries of the estate. The total length of the roads is roughly four miles, and they vary in width from 40 ft. in the main roads to 30 ft. in the subsidiary roads. The open spaces for recreation and for providing a playground for the many children on this great estate are of considerable area, while a liberal allowance has been given for the purpose of garden space for every house.

What is perhaps surprising about this estate is that its execution was carried out with almost inconceivable rapidity, the time occupied being just over ten months, and yet no sign of want of thought in design or scamped execution is apparent anywhere. The houses comprise a multiplicity of design, very few blocks appearing to be repetitions. The quality of the building is of the highest order, as was conspicuously shown when the estate was, unfortunately, visited during one of the Zeppelin raids, when many very heavy bombs were dropped in various parts. The damage in any ordinary housing scheme would have been very serious. In this case, however, the damage was surprisingly small, illustrating the solid and excellent character of the workmanship throughout.

The setting out of the site was commenced on February 1, 1915, and a thousand of the houses were completed early in September and the whole of them before the end of the same year.

Of the 1,298 dwellings, 212 are self-contained flats, and the accommodation of the whole provides for a population of 6,490 persons.

The classes of the houses are as follows:—

Class 1.—Containing a living-room, parlour, spare bedroom or dining-room, and a scullery on the ground floor and three bedrooms, a bathroom with hot and cold water laid on, and the usual offices on the first floor.

Class 2.—Similar to Class 1, with the exception that the third room on the ground floor is omitted.

Class 3.—Containing a living-room and scullery on the ground floor and three bedrooms upstairs, the bath being in the scullery.

Class 4.—Comprising self-contained flats arranged in two-storey houses. Each flat consists of a living-room, scullery with bath, two bedrooms and the usual offices.

The illustrations will best convey some idea of the quality and multiplicity of the design, the excellence of the standard of building, and the general amenities preserved by this exceptional estate.

OBITUARY.

Major J. W. M. Halley, R.E., who was killed in action on October 24, was a Fellow of the Royal Institute of British Architects and was born in Glasgow in 1877, educated at Hillhead High School, and after architectural training with Mr. Lieper, he came to London, where he worked with Messrs. Nevin and Wigglesworth, and afterwards with Mr. Mervyn Macartney, architect to St. Paul's, with whom he had been associated for over ten years. In the first few months of the war he received a commission in the Royal Engineers, and he was gazetted as major a few months ago. He was wounded last year at Arras. Major Halley entered for many competitions, and was highly placed in the competition for The Hague Palace of Peace, and was on the "short leet" for the Mitchell Library at Glasgow. Under Mr. Macartney, with whom he was much in sympathy, he worked on the Chapel of St. Michael and St. George, in St. Paul's Cathedral. His essay on "The Rebuilding and the Workmen of St. Paul's Cathedral" received the R.I.B.A. prize in 1914. He was shot by a sniper on the bank of the Scheldt, where he and another officer had crawled to prospect for bridging the river.

We regret to announce the death, in his 42nd year, after a short illness, of Mr. H. Cecil Walker, the eldest son of Mr. Henry C. Walker, Chairman of Waygood-Otis, Ltd., Falmouth Road, London. Mr. Walker entered the shops of R. Waygood and Co. in September, 1893, and in time occupied the position of chief electrical engineer to the company. In November, 1910, he was appointed to a seat on the board of directors, and this he retained after the amalgamation with the Otis Elevator Co., Ltd. He rendered great service in the design of the electric lifts of the company, which have gained it such a high reputation.

The building of a new church for St. Mary's parish, Lancaster, is contemplated.

Our Illustrations.

GOVERNMENT HOUSING SCHEME, WELL HALL ESTATE, WOOLWICH.

The description of these illustrations will be found on p. 352.

TWO WAR MEMORIAL NARTHEX SCREENS, MUNICIPAL PARISH CHURCH, BROADWAY, HAMMERSMITH.

At the western end of this big London church two of these war memorial screens are to be erected to the right and left of the octagonal-ended baptistery, and set in the last bay of the nave, so as to form narthex enclosures at the ends of the north and south aisles. The little key plan included in the accompanying perspective of one of these screens shows this arrangement. The roll of honour of this extensive parish has not yet been completed, but the list already compiled by the vicar, the Rev. G. N. Walsh, M.A., is a very long one, including as it does the names of sailors and soldiers who fought and fell for King and Country, all being Hammersmith men. Ample space, therefore, had to be provided, and the series of frieze panels will suffice, allowing for inch letters in gilt gesso on the plain oak face set out in distinct characters below the main cornice. Along the cusped and pierced fascia a range of carved shields of the badges and arms of the various ships and regiments represented will be gilt and decorated in heraldic colours. Above the main doors, towards the nave and opposite to the main entrances of the church, the Royal Arms will be boldly sculptured and picked out in gold and proper tints. The reverse sides of the screens will correspond exactly, but in lieu of the Royal Arms a foliated cross will be employed. The lower series of shields, finished in gold, will bear the emblems of Christ's Passion. Stout reinforced lead cames of wide scantling will be used for the clear white glazing in the larger openings of the screens. Their lower panels are linenfold in section with simple arched carved heads as shown. The dedication inscription occupies the whole extent of the secondary cornice, in carved raised lettering picked out in gold so as to be clearly legible. The columns between which the screens extend are of polished Belgian marble corresponding with the tall western dado, also throughout the baptistery. The screens will be in English oak. Tenders for the work have already been obtained. The architect is Mr. Maurice B. Adams, F.R.I.B.A.

DETAIL OF BILLIARD ROOM BAY WINDOW, PUTTERIDGE PARK, BEDFORDSHIRE.

Continuing our series of reproductions of working drawings by Messrs. Sir Ernest George, R.A., and A. B. Yeates, FF.R.I.B.A., we give to-day their sheet of details in illustration of the Bay Window to the Billiard Room of this Bedfordshire country house, built for Mr. T. M. Clutterbuck. It corresponds with the bay of the hall, both features being situate on the south front, of which we gave an elevation in our issue for August 28 last. A detail of the Boudoir Gable in the same façade will be found in THE BUILDING NEWS for September 11. Messrs. Holland and Hannen are the builders.

SKETCHES IN LEDBURY AND BRIGSTOCK MANOR HOUSE.

The Northamptonshire Church at Brigstock, with its unique projecting and big circular adjunct on the western face of the very early tower, is well-known; but the

(*Continued on page 364.*)

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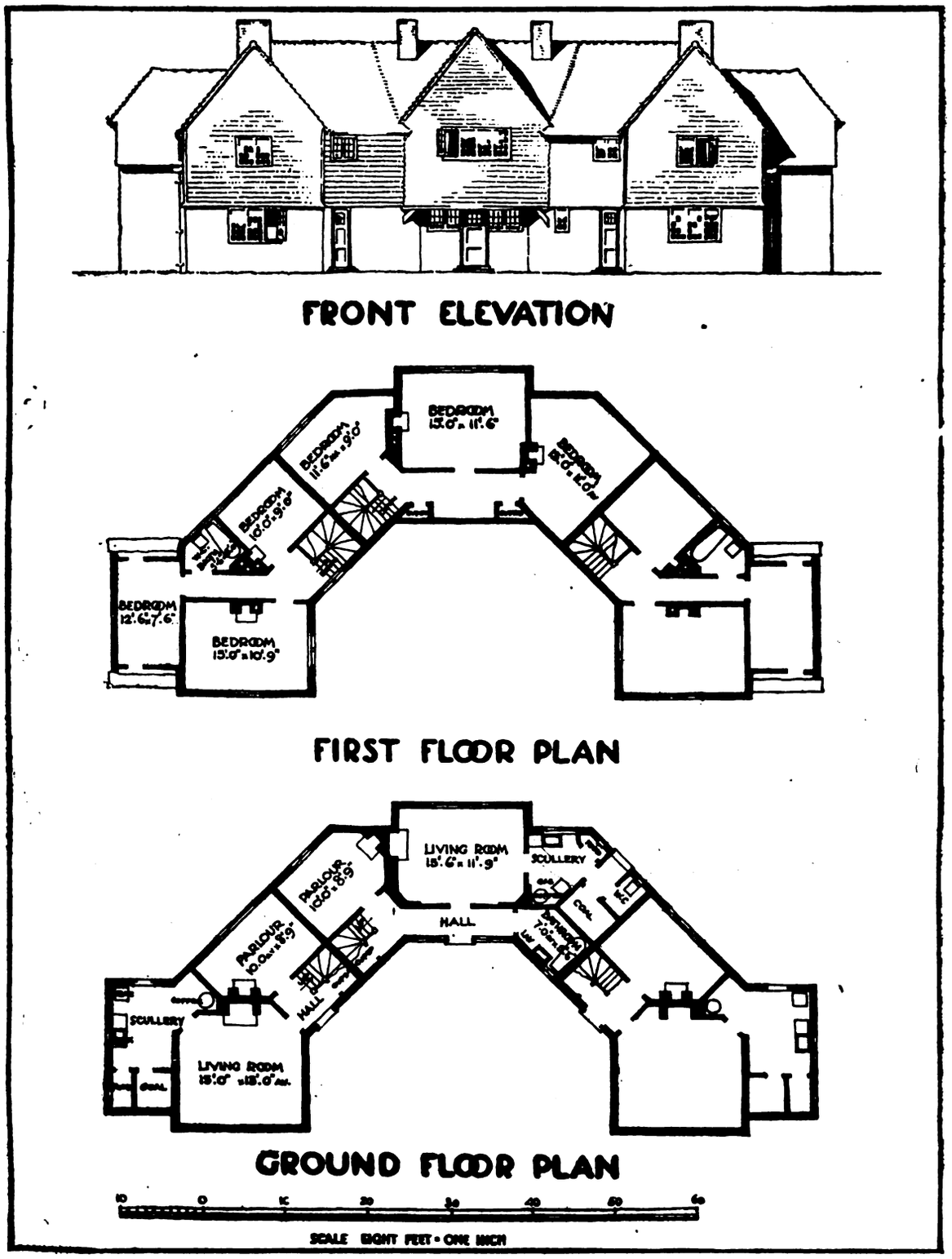

GOVERNMENT HOUSING SCHEME, WELL HALL, WOOLWICH.
HOUSES IN RUPERT ROAD AND WELL HALL ROAD
SIR FRANK BAINES, C.B.E., M.V.O., H.M. Office of Works, Architect.

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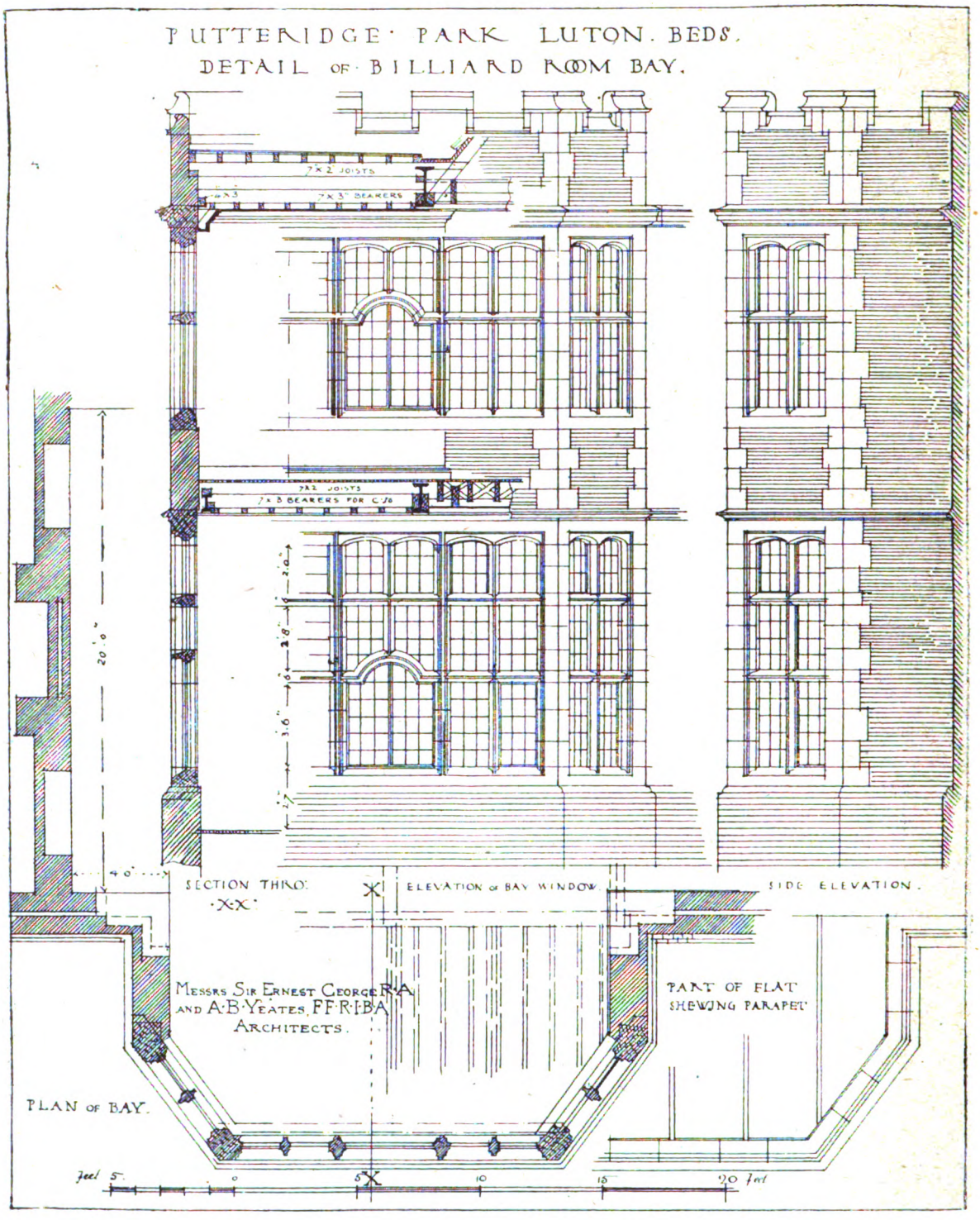

DETAIL OF BILLIARD ROOM BAY, PUTTERIDGE PARK, BEDS.

Messrs. Sir ERNEST GEORGE, R.A., and A. B. YEATES, FF.R.I.B.A., Architects.

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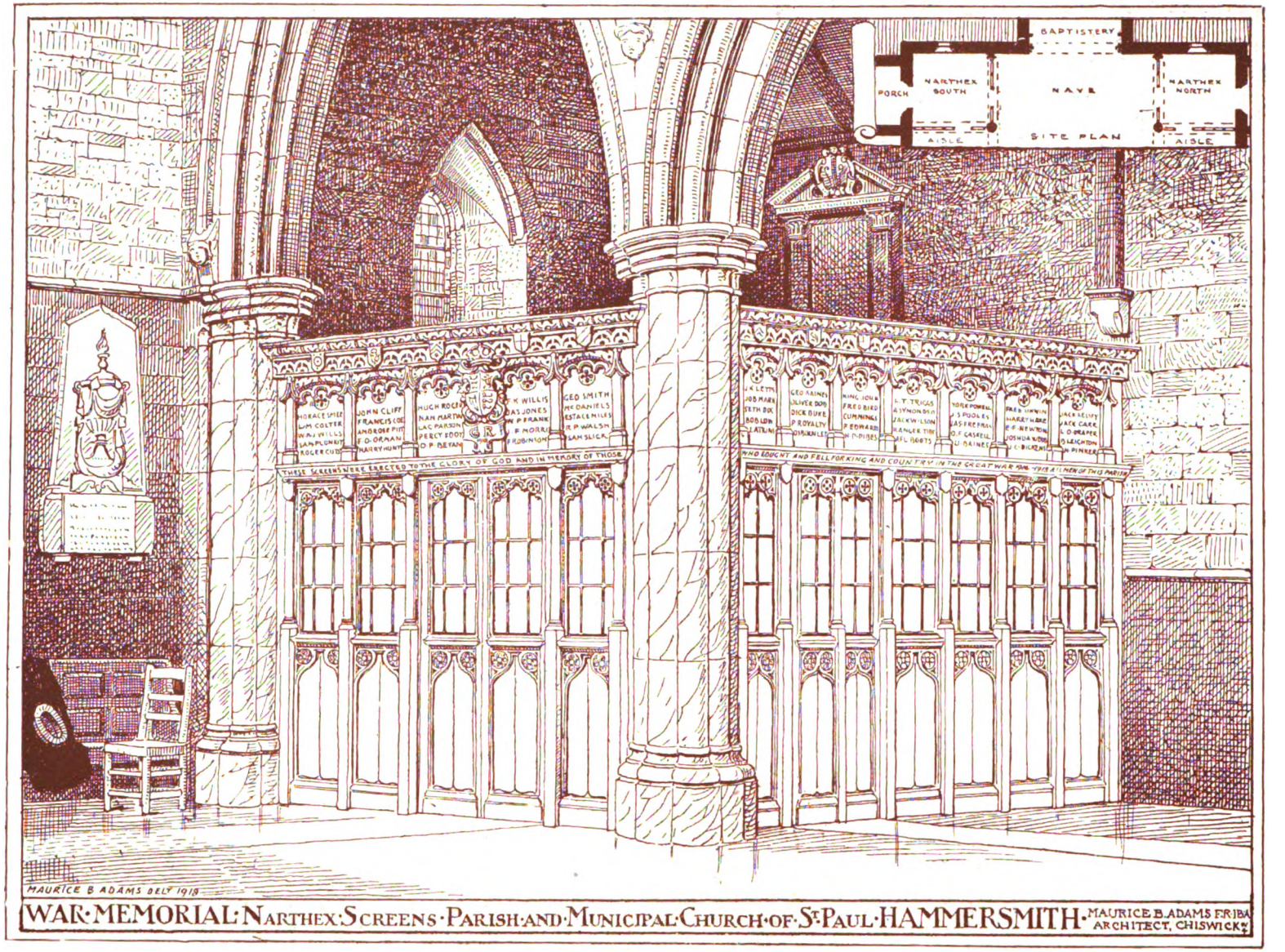
BAPTISTERY
PORCH
NARTHEX SOUTH
NAVE
NARTHEX NORTH
AISLE
SITE PLAN
AISLE
THESE SCREENS WERE ERECTED TO THE GLORY OF GOD AND IN MEMORY OF THOSE
AND FOUGHT AND FELL FOR KING AND COUNTRY IN THE GREAT WAR 1914-1918 A.D. OF THIS PARISH
MAURICE B ADAMS DELT 1918

WAR MEMORIAL NARTHEX SCREENS PARISH AND MUNICIPAL CHURCH OF ST PAUL HAMMERSMITH. MAURICE B. ADAMS F.R.I.B.A. ARCHITECT, CHISWICK.

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GOVERNMENT HOUSING SCHEME, WELL HALL, WOOLWICH.

BLOCK E-SIDE OF WELL HALL ROAD AND VIEW OF ROSSWAY LOOKING EAST.

SIR FRANK BAINES, C.B.E., M.V.O., H.M. Office of Works, Architect.

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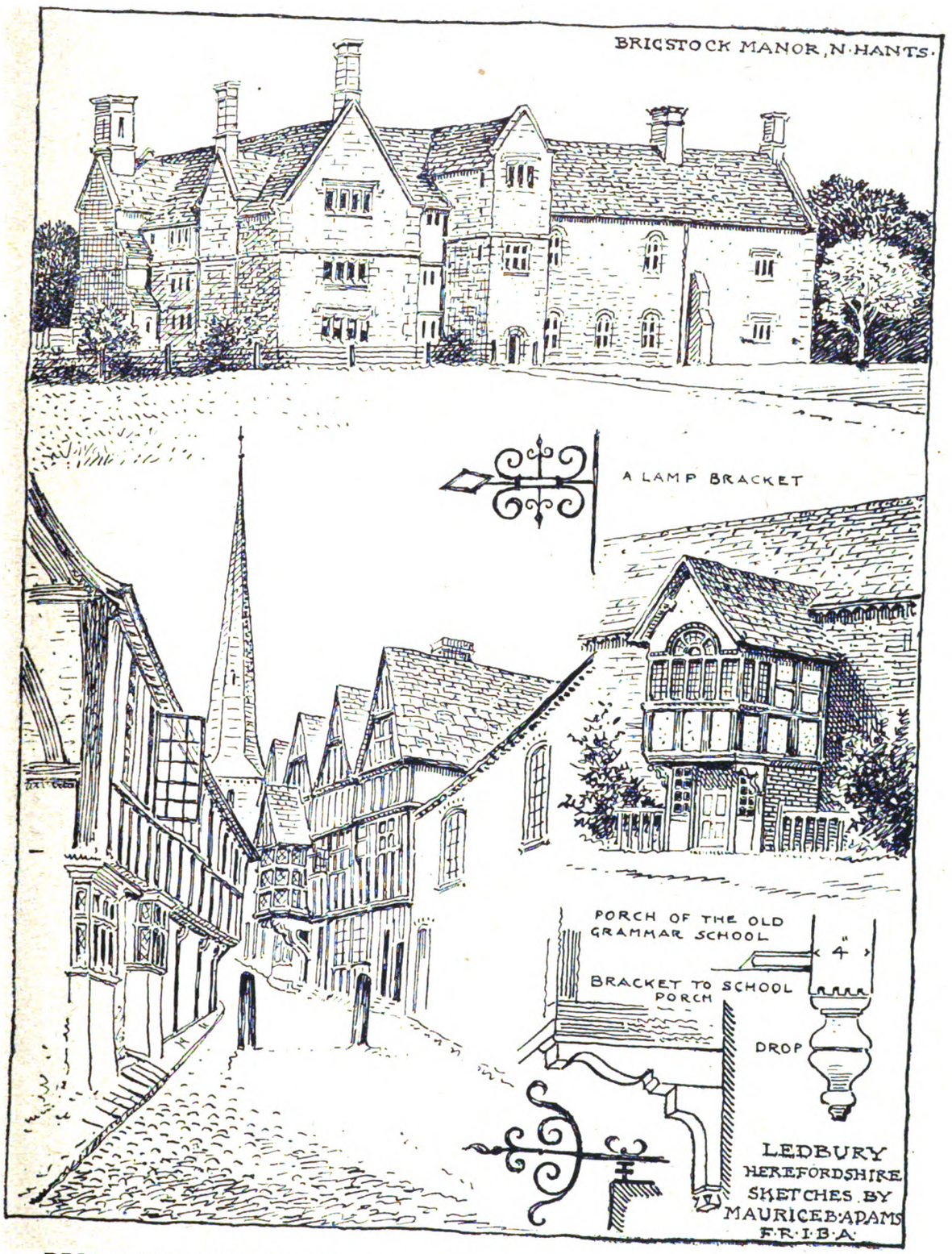

BRIGSTOCK MANOR AND LEDBURY.—Sketches by MAURICE B. ADAMS.

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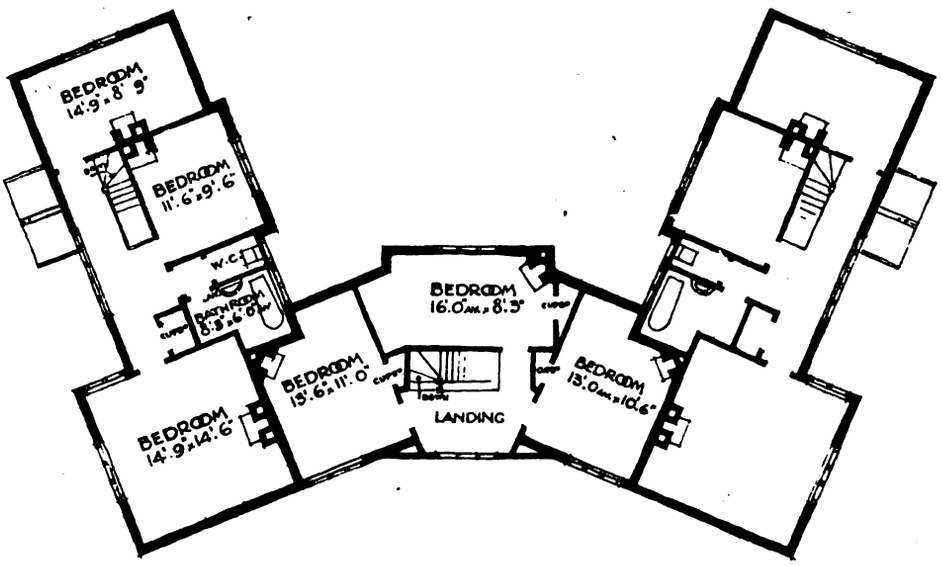
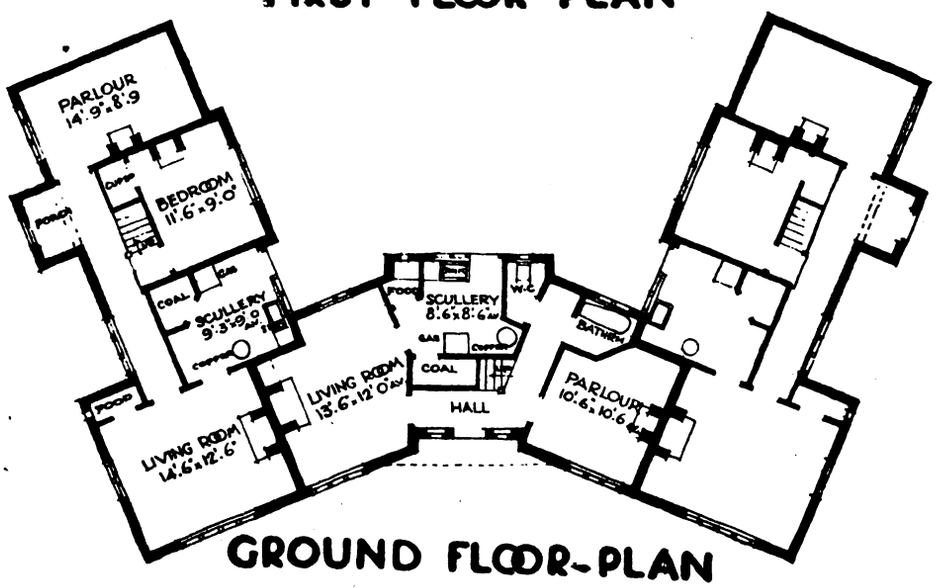
FRONT ELEVATION



FIRST FLOOR PLAN



GROUND FLOOR-PLAN

GOVERNMENT HOUSING SCHEME, WELL HALL, WOOLWICH.
HOUSES IN RUPERT ROAD AND WELL HALL ROAD.
SIR FRANK BAINES, C.B.E., M.V.O., H.M. Office of Works, Architect.

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OUR ILLUSTRATIONS.

(*Continued from page 353.*)

Manor House is by no means famous, though reputed to have been the birthplace of Sir Edward Montague, who founded Boughton, one of the most distinguished places in the county. The sketch shows this modest manor house with its mullioned and transomed windows, some of the lights having cusped heads. There is an upper as well as a lower hall. Inside there is some fine historic furniture, including a sixteenth century marquetry four-post bedstead, which, like some other pieces, being too big to remove, goes with the property. The staircase also is worth naming, and in the village there are still some houses of similar quiet design, befitting neighbours to this Manorial Hall.

Ledbury, over beyond the western slopes of the Malvern Hills, is in Herefordshire. This quaint little town is chiefly remembered by architects for its timber-built Market House, which is detached in form, standing out of the way of the traffic in the main street. The superstructure is carried by sixteen posts, which at the sides give very much the appearance of an arcade by reason of the segmental brackets which nearly meet, the spacing being narrow. The designer of this uncommon structure was John Abel, who died in 1674. Originally, it had two upper floors: but when the building was done up during the last century, the second floor, which rested on the roof tie-beams, was taken away. A capital set of measured drawings of this Market House, by Mr. E. I. May, F.R.I.B.A., will be found in our issue of December 14, 1877. The narrow winding street of timbered houses behind the Market Place is the most picturesque feature, taken in conjunction with Abel's building. This is the footway figured in our sketch, the church coming at the end of the vista. The tower is detached from the nave like that at Bosbury. Its tall, broached spire was built in the eighteenth century, and if rather attenuated is of good proportions. The church is capacious and handsome. Before the restoration it was crowded by galleries and boxed pews, including a remarkable manorial parlour pew fitted with a stove and sofa-like seats. The late Richard Coad, the architect of Messrs. Cocks, Biddulph and Co.'s Bank, in Whitehall, rearranged and seated the north aisle of Ledbury Church, and provided a new Biddulph pew set facing south. The late Mr. Kemp carried out a splendid series of stained-glass windows in both aisles, rich in colour, and thoroughly adapted to their position. The porch to the old Grammar School in the High Street, if late in date, with some pretty brackets of simple detail, is shown also on this sheet.

The Ashton-under-Lyne Corporation proposes to extend the tramway depot in Mossley Road at an estimated cost of £18,309.

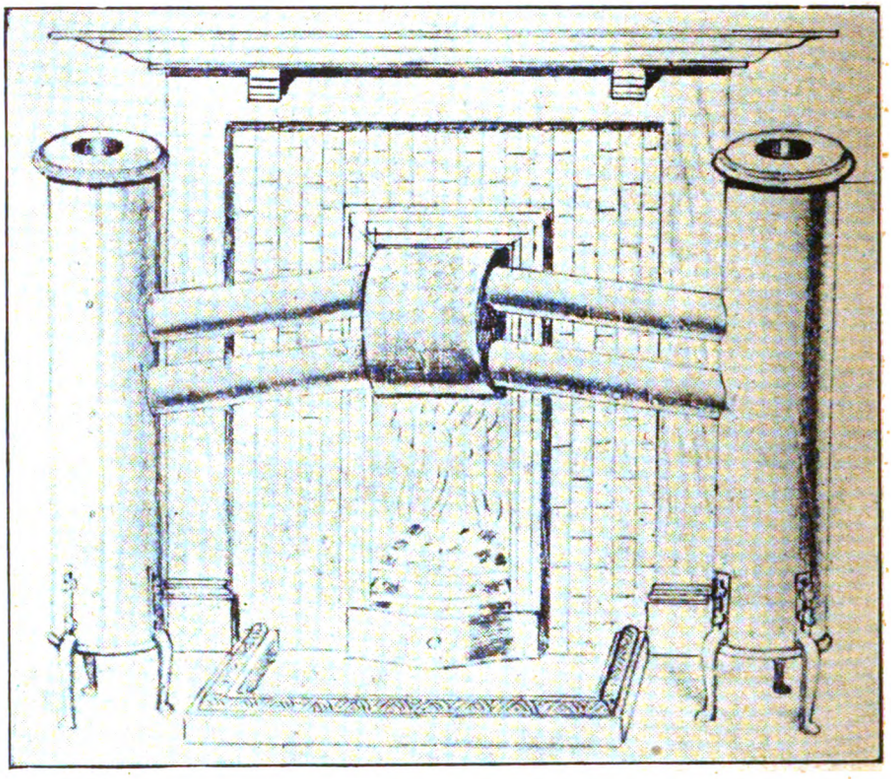
The Cannock U.D.C. has resolved to provide public baths for the district. It is suggested that the building be erected in the vicinity of Chadmoor, midway between Cannock and Hednesford.

The next monthly meeting of the Property Owners' Protection Association, Ltd., will be held on Friday next, the 29th inst., in the Pillar Hall, Cannon Street Hotel, E.C., at 4 p.m., to consider whether the proposal for a Property Owners' Mortgage Society can be usefully adopted. M. Cheverton Brown, Esq., C.C. (Past President of the National Federation of Property Owners and Ratepayers, and President of the Hull Property Owners' Association), will give an address: "A Great Union of Owners: How to Protect Our Interests and Help Each Other." The chair will be taken by Edwin Evans, Esq., J.P., L.C.C. The meeting will be open for discussion on property matters, and all questions and inquiries replied to

PROFESSOR BOYS'S HEAT DISTRIBUTOR AND COAL SAVER.

THE INVENTION OF PROF. C. VERNON BOYS, F.R.S.

The open fire, pleasant as it is, is unfortunately a most extravagant device for using fuel. The proportion of heat utilised in the room may be 12 per cent. (more or less), according to the wastefulness of the fireplace, or, in other words, the waste of heat up the chimney may be seven times (less or more) than that utilised in the room. The Boys Heat Distributor and Coal Saver is a device which begins where other devices leave off, it takes the heat which hitherto has gone to waste up the chimney, extracts some of it and distributes this as warm air in the room. It is difficult to give figures because no two makes of fireplace are alike in their wastefulness; but this may be said, the more wasteful the fireplace, the more wasted heat there is



taken toll of, and this toll may well be two or three times the amount which the open fire radiates directly into the room, and this pleasant radiation remains unaffected by the presence or operation of the device.

The direct route from the fire to the chimney is blocked by a plate, and the hot gases are thereby diverted into heat interchangers which may take a variety of forms. A convenient form is a pair of upright cylinders standing, one on each side of the fireplace and joined by pipes with a box which fits the upper part of the fireplace, but which leaves the fire visible as usual. These cylinders each contain a large central pipe open above and below, round which the hot gases are made to circulate by partitions, and thus within and without the air of the room warmed by contact with the warm metal ascends as a stream, and sweeping over the ceiling descends elsewhere in the room, keeping remote corners warm which were never warm before.

The essence of comfortable warming is a large surface at a moderate temperature, not a smaller surface at a higher temperature, which latter gives rise to a smell of scorched dust, and this desideratum is realised very completely in the Boys Heat Distributor and Coal Saver.

One reason why the usual open fireplace is so inefficient is the large amount of air that comes into the room cold through every chink and crack of the doors and windows, and having been warmed at the expense of the heat in the room proceeds straightway up the chimney. Some ventilation of the kind is desirable, but it is carried on to a wholly undesirable extent in the usual open chimney. The chimney may be partially closed by a plate to reduce this loss, but the Heat Distributor itself interposes a resistance in the flow which may be made greater by slight obstructions in the intake pipes, and thus the excessive cooling by undue ventilation avoided. Paradoxical as it may seem, it is even possible that the gases in the chimney after half their heat has been abstracted by this device may for this reason be warmer than they are without, because the large excess of cold air intermixed with them may in this way be brought within reason.

The modern gas fire has been designed with such a perfect balance that the undesirable loss of heat from this cause is avoided. It is for this reason that the inventor of the Boys Heat Distributor and Coal Saver is disinclined to adapt his invention to the modern gas fire. The gas fire is perhaps three times as efficient as a good type of fireplace, and there is less waste heat waiting to be utilised.

If objection is taken that this device is not altogether ornamental, and on that account is not acceptable, the answer is—perhaps not with cheap and abundant fuel and consequent indifference to waste; but fuel is not just now cheap or abundant, and if people are cold and shivering they will welcome what formerly they would have rejected, and having broken down their prejudice they may well decide to retain in permanent service a thing which adds so much to the comfort of a room and the economy of the fire. Coal may be abundant, but it is not expected that it will ever be cheap again.

The cover of each of the interchangers is made to lift off the outer casing and take the inner open tube with it so that the whole of the interior may be reached at intervals for the purpose of removing dust and soot, which should not be allowed to accumulate to a great extent.

The apparatus can be seen in operation at the offices of the Barbed Wire Traverser Co., Ltd., 29 and 30, Charing Cross. Tel., 6482 Gerrard. Our own inspection has convinced us that it is *the* solution from present difficulties, especially in large rooms. It will be on the market presently at a very moderate price.

The trustees have approved plans for a new ward block on the men's side at the Wilkinson Sanatorium, Bolton, and application is to be made for permission to make a start with the work

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THE SURVEYORS' INSTITUTION.

(*Continued from page 333.*)

In 1895 the first steps were taken towards the erection of our present building. Temporary premises were engaged in the Medical Examination Hall on the Embankment (now the offices of the Institution of Electrical Engineers), where so many of us have passed some anxious, but let us hope not altogether unprofitable, hours; and a number of leading architects were invited to compete for the work of erecting the new building, the design of Mr. Alfred Waterhouse, R.A., being that finally selected. It was not, however, until 1899 that the building was ready for occupation, and was opened to members by two successful receptions under the presidency of the late Mr. T. M. Rickman by way of housewarming. The total cost amounted to approximately £35,000, and it speaks well for the prosperity which had attended the Institution since its foundation, thirty years previously, that it was able thus adequately to house itself from accumulated funds and without resort to borrowing.

In 1910-11 a further extension took place, the offices of the Institution staff, which had previously been inconveniently distributed throughout the building, being brought together in their present form by an extension over the mews behind, the lecture hall and council room being enlarged at the same time. The completion of our fifty years, therefore, sees us suitably housed in a building worthy of the position which the Institution has made for itself, and which we hold, free from debt, on a lease of 999 years.

The Council have done what they can to make their home both useful and attractive to members, and I am happy to say that the right of obtaining a private room for an interview with a client or for other purposes is one of which advantage is largely taken by country members. Indeed, the opinion which I have heard sometimes expressed that the Institution buildings are of greater use to metropolitan than to country members is not, I believe, borne out by the facts.

Time will not permit me to do more than mention the Library, the Forestry Museum, and the Geological and Building Stone Collections, which have proved their value to both members and students. In 1912 the former was dealt with in a most interesting paper by our late secretary, Mr. Julian Rogers, entitled "An Evening in the Institution Library," which would well repay the perusal of those interested in literature. But apart from historical, scientific, and topographical works we possess probably the finest collection of reference books on subjects connected with our profession in the kingdom, as well as a complete set of text-books for the use of students. These were in many cases duplicated when the Loan Library was established in 1903, with the object of placing country members desirous of consulting works in the library on an equality with their metropolitan brethren. The value attached by the former to this additional branch of the library is evidenced by the ever-increasing use which is made of its facilities.

GROWTH AND PROGRESS.

There is no doubt that the standing and importance of the Institution was raised by the grant of a Royal Charter in 1881, soon after the system of examinations, of which more anon, was set up; and while considering the subject of this address it has been brought home to me that it would be to the benefit of members were the designation "Chartered Surveyor," the use of which was sanctioned by the by-laws, as amended by the Privy Council in 1901, as an alternative to the letters F.S.I., more generally employed. There is little doubt, I think, that the use of the term "Chartered" by the members of a kindred professional society has proved of real and definite service to them, by impressing upon the public that its users possess a qualification not held by every person practising in that profession, and one which offers a substantial guarantee both of their knowledge and their integrity. I would ask members to consider this, looking at the question not so much from the point of view of their individual interest—the position of well-established firms might hardly be affected—but from that of junior and future members.

In 1888 a new departure, which was to have a marked effect on the future of the Institution, was introduced by the establishment of Provincial Committees. Its object was to strengthen the ties between members practising in the provinces and the central body; to place upon them a part of the responsibility of administering the Institution's affairs; to enable the opinion of the profession on legislative and other proposals to be speedily and accurately ascertained; and to stimulate that corporate feeling upon which the strength of professional societies must largely depend.

At the time some doubt seems to have existed as to the wisdom of the proposal. Possibly in the minds of some the question arose whether its adoption might not lead to a loosening rather than a strengthening of the bonds which held town and country together. At any rate, the trial was made in a somewhat tentative manner, seven committees only, representing twenty-three English counties, being at first set up. Fortunately the fears, if fears there were, proved groundless, and the committees fulfilled the hopes of those who had advocated their formation. The system was extended to the whole of the United Kingdom, and has proved of the greatest value to the Council in carrying on their work. Of comparatively recent years the connection between the local committees and the Council has been still further consolidated by the chairmen of the former being invited to act upon the Standing Committees of the latter. This arrangement has proved mutually beneficial: the chairmen have obtained an insight into the work carried on at headquarters, while the Council have had the advantage of learning at first hand the views of their fellow-members in the country.

It had been my intention, as President during this Jubilee year, to ask the chairmen and secretaries of the Provincial Committees to organise a series of meetings, either jointly or singly, at which members of the Council and myself might have had an opportunity of meeting members in all parts of the kingdom and discussing with them both professional and domestic matters. Unfortunately, war work, to which members are devoting so much of their time, reduced staffs, the difficulty of travelling, and other causes, have rendered it impracticable to carry out this proposal, and I can only express a hope that, though I may not be able to meet so many of our friends in the provinces as I could wish during my year of office, I may take my part in such a series of meetings at some future date when this terrible war is over.

I cannot leave the subject of these committees and their work without saying one word as to the importance I and, I may add, my colleagues on the Council, attach to their being really active centres of professional life in the provinces. Apart from their social side, and the advantage it is to younger men to meet their professional seniors in friendly gathering, to obtain their advice on points of professional practice and their encouragement in times of difficulty, it is from time to time of the utmost importance that the Council should be able to ascertain the views of surveyors throughout the country on legislative proposals and other matters on which their advice may be sought or on which their voice should be heard. In such cases it is to the local committees that we turn.

If, however, I may be permitted to say so without offence, I am inclined to think that these committees might perhaps act more freely on their own initiative. There must frequently be questions arising in their districts calling for action or advice, and I would ask them to be on the watch for such matters, and, when they consider it desirable or necessary, not to hesitate to bring them before the Council, when I can assure them that they will be received with sympathy and accorded the best advice and assistance we can give them.

It is to the provincial committees also that we must largely look for our students and examination candidates in the future. The men who will carry on the traditions and work of the Institution in coming generations will best be trained if the corporate spirit is early instilled into them by their employers interesting them in the doings of their local committees. The tree itself will remain sound and vigorous if its branches are healthy and green.

I must now turn from these more domestic matters to the subject touched upon in an earlier part of this address—viz., the objects for which the Institution was founded and the manner in which they have been carried out.

THE EXAMINATIONS.

Dealing first with (*a*) intellectual advancement, the establishment of the examinations in 1881 must at once spring to the minds of everyone, and I am proud to think that, although the Surveyors' Institution is not the oldest of the professional societies, it was the first to introduce the examination system as the qualification for membership.

To us who have been brought up with that system as a method of testing the knowledge and qualifications of applicants for membership the idea may seem the most natural possible, but forty years ago the world was less advanced, and it speaks well for the foresight and breadth of view of those who then guided the Institution barque that they first combated the doubts of those who questioned the possibility of setting up technical examinations of a sufficiently practical nature to be of value, and finally convinced them as to the advantages which would attend such a departure. The statistics contained in the annual report of the Council prove conclusively, if proof is necessary, the success of the venture. Starting in 1881 with thirteen candidates in the preliminary and two in the professional examinations, the high-water mark was reached in 1913, the year before the war, with 146 candidates in the preliminary and 1,266 in the professional. The effect on membership was equally noticeable; in 1881 there were 535 members, the following year 722, and within a decade the total had reached 2,268.

The success attending the Institution's lead was recognised by other societies, and the example was followed by the engineers, architects, accountants, and others.

The standard of examination, which from the first was set at a high level, has been steadily raised as the higher attainments and better opportunities of the candidates permitted this to be done, while the importance of keeping them thoroughly practical in character has never been overlooked. It is satisfactory to note that the efficiency of the examinations has received public recognition on the part of the Civil Service Commissioners, who accept them as qualifying candidates for posts on the permanent establishment of the Valuation Department of the Inland Revenue; and by the Home Office in respect of the issue of certificates as mining surveyors under the Coal Mines Act, 1911. The Colonial Office have also recognised the qualifications of the Institution as an examining body, and since 1911 have asked them to carry out the examinations for colonial survey appointments in the Crown Colonies, candidates who have been successful in the Institution tests being relieved of the practical portion of those carried out on behalf of the Colonial Office.

In 1890 special diploma examinations in advanced land surveying, forestry and sanitary science were established, these being open to members wishing to qualify as specialists in these subjects. These examinations have not been held since the war owing to lack of candidates, but the numbers who presented themselves between 1890 and 1914 indicate that they met a felt want; and there is every reason to hope that with the openings which must offer themselves, in forestry particularly, as a result of the recommendations of the Reconstruction Committee, the demand will increase rather than diminish in the future.

I should perhaps add that although these examinations have not been held since the commencement of the war, the reason has been lack of candidates, and the Council would be glad again to hold them on a sufficient number of candidates expressing a wish to present themselves for examination in any of the subjects.

(*To be continued.*)

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Our Office Table.

In his presidential address to the Australian Town Planning Conference, held in Brisbane, Mr. J. D. Fitzgerald, M.L.C., Minister for Local Government and Health, and for Town Planning, New South Wales, said: "We have assembled to plan out the destinies of Australian city dwellers. It is an unchallengeable fact that our movement will change the destiny of the urban populations, that our propaganda will make our civic conditions better, our city plans nobler, our citizens happier and comfortable beyond the dreams of to-day; that our town planners' devices will save millions to the nation which would otherwise be poured out in sheer and wicked economic waste—wicked because preventable. We Australians are only at the beginning of the great campaign which we must fight before we create ideal conditions for our city dwellers," continued the New South Wales Minister. "Our Parliaments must hasten to the aid of the pioneers. Already several of the States have general town planning bills prepared. Four years of war have changed the face of things as regards housing as well as everything else. Britain has leaped forward 100 years in methods, in organisations, in planning in advance, in housing, and, above all, in outlook. If for no other reason the calling of this conference is justified by the fact that the Government of Queensland has made our deliberations cluster round the welfare of the returned soldiers and has invited us to apply the resources of the town planner to the problem of making those who have fought for our lives and liberties happier than they could possibly be under the old conditions. We eagerly respond to this invitation, and I hope that out of our deliberations may come practical and helpful schemes that will assist the returned soldier."

At the seventy-first annual meeting of the Birmingham Freehold Land Society held last week at the Grand Hotel, under the presidency of Mr. W. J. Lancaster, moving the adoption of the report, he said the scarcity of housing accommodation had become very acute, and he thought private enterprise would alone solve the difficulty, but naturally they could not expect private enterprise to work without an adequate return. Therefore, until a builder could see a reasonable profit on his outlay he would be foolish to embark on any undertaking. The abolition of the irksome restrictions imposed by the Rent Act, and the extension of the compound limit, would no doubt help matters, but the enormously increased cost of material and the high price of labour (when obtainable) rendered the building of property a serious matter. But the society would be prepared to find land for the erection of some of the houses required, and the kindred societies would be ready to assist financially in the cost of such erections.

In an appeal case, Dennis and Sons, Limited, v. Good, before the King's Bench Division, on the 13th inst., from a decision of the Justices of Boston under Section 72 of the Highways Act, 1835, convicting them of having unlawfully destroyed the surface of certain public footpaths in two fields belonging to them by ploughing them up and thereby doing injury to the footpaths, the Court affirmed the conviction. Mr. Justice Darling said that an ordinary person would not call a footpath a highway, and he was at first inclined to think that the appellants had committed no offence, but the decision in Mercer v. Woodgate went upon the assumption that a footpath was a highway, and therefore the justices were right in holding that the appellants had infringed the statute. With regard to the notice from the War Agricultural Committee, it only required the appellants to plough the land. It did not enable them to get rid of an easement by ploughing the footpath. Justices Coleridge and Avory gave judgment to the same effect.

The Royal British Colonial Society of Artists has arranged an exhibition of paintings, water-colours, black-and-white art, and sculpture by the oversea artists now in London and by their British confrères. The Duke of Connaught opened the exhibition last Monday. The exhibition includes works of art by Canadian, Australian, New Zealand, and South African artists, many of whom are members of the principal societies in London, and also works by several associates of the Royal Academy. The official artists engaged by their Governments in painting records of the great war will be well represented. The members of the Royal Academy have placed Burlington House at the society's disposal. The admission will be 1s. 3d., including tax.

The Order of the Local Government Board controlling the duration of public entertainments in England and Wales, and devised as a measure for securing the thorough ventilation of theatres, music-halls, and picture houses, came into force on Monday last. It requires that no entertainment shall be carried on for more than three consecutive hours, and that there shall be an interval of at least thirty minutes between two successive entertainments, so that the building may be effectually ventilated.

LEGAL INTELLIGENCE.

Euston Road Line of Buildings.—On September 28, 1909, the architect of the London County Council, acting in the capacity of superintendent architect of metropolitan buildings, and by virtue of the powers vested in him by section 22 of the London Building Act, 1894, issued a certificate defining the general line of buildings on the north side of that portion of Euston Road which is situated between Osnaburgh Street and Hampstead Road. The line defined by such certificate was practically a line 50 feet back from the pavement. Various parties interested appealed against the certificate, but the Tribunal of Appeal confirmed the superintending architect's certificate so far as it related to the central portion of the line, over three-fourths of the whole. In the case of the short length at the Hampstead Road end the Tribunal decided that the fronts of the existing buildings abutting upon the street formed the general line, and as regards the short length at the Osnaburgh Street end they decided that there was no general line. An appeal was entered by W. L. B. Clode and others (Leslie's trustees) against the confirmation by the Tribunal of Appeal of the superintending architect's certificate so far as it related to the portion between the points CC and DD. This appeal was eventually taken by the Council to the House of Lords, who allowed the appeal and confirmed the architect's decision as to this section of the road. The result of the appeal was reported to the Council on June 22, 1915. Upon the decision of the Tribunal above referred to being given, notice of appeal was given by the Council against so much of the decision as related to the portion of Euston Road between the limits AA and CC on the plan, the Council being advised that the decision was wrong in law, but by arrangement with the Tribunal and the Metropolitan Railway Company, the latter being concerned as property owners within that section, the stating of the necessary special case for the opinion of the High Court was left over pending the decision of the courts in the case of Leslie's trustees. The Metropolitan Railway Company and the Council having failed to agree to the terms of a special case, application was made to the Tribunal to settle it, but the Tribunal declined to state a case on the ground that no point of law arose. The Council on March 21, 1916 (pp. 268-9) accordingly gave instructions for application to be made for a mandamus directed to the Tribunal requiring them to state a special case, and the application was made to the Divisional Court on April 6, 1916, for a rule nisi for the mandamus, and was granted, and the rule was subsequently made absolute. Three points of law were set out in the rule as follows:—(1) Whether in these proceedings the Tribunal were entitled to define the general line of buildings between the points AA and CC on the plan. (2) Whether the Tribunal were right in determining that there was no general line of buildings between the points AA and CC on the plan. (3) Whether the Tribunal were entitled to determine in what street or streets the buildings to the west of the point B on the plan before mentioned were situate, or to determine that such buildings were not in the Euston Road at all. The Court intimated that as regards the first two points they had decided to make the rule absolute, but it was suggested that as the buildings referred to in the third point of law were not the property of the railway company, who were not therefore affected by the point raised, counsel on behalf of the Council should deal with that point. After hearing the arguments on behalf of the Council on this point the Court intimated that they had come to the conclusion that the rule must be made absolute on this point also, it being understood that it should be open to the railway company on the hearing of the special case to be stated in accordance with the rule, to contend that the third point did not affect them. The Court refrained from expressing any opinion upon the merits of the points of law raised so as not to affect or prejudice either party. A case was accordingly stated by the Tribunal of Appeal, and the Council on November 27, 1917, gave instructions for the decision of the High Court to be obtained. The case came on for argument before a Divisional Court on June 11 and 12, and judgment was given on June 14, 1918. In giving judgment Mr. Justice Atkin upheld the Council's contention that when once the Tribunal had decided that the buildings in question, in respect of which the architect's certificate was made, were situate in section CC-DD of the road, and had defined a line within that section they were *functus officio*, and had no power to proceed to define a line or to decide that there was no line in any other part of the road. Having come to the conclusion that the Tribunal had in the circumstances no jurisdiction to deal with the section AA-CC, his Lordship intimated that it was unnecessary to decide on the second contention raised by the Council, viz., that, assuming that the Tribunal had jurisdiction to deal with this section of the road there was no evidence before them on which they could properly find that no general line of buildings existed, but that, on the contrary, the Tribunal's own findings precluded them from coming to that conclusion, although this point was dealt with at some length in his Lordship's judgment. After giving judgment his Lordship stated that Mr. Justice Shearman took a different view of the matter, and that in these circumstances the Order appealed from by the Council would have to stand, but that no costs would be given to either party. The Council on June 25, 1918 (p. 648), decided to obtain the decision of the Court of Appeal in the matter. The appeal came on for argument on November 12 and 13, 1918, before Lords Justices Bankes, Warrington, and Scrutton, when Mr. Upjohn, K.C., and Mr. W. Craig Henderson appeared for the Council, and Mr. Macmorran, K.C., and Mr. Bethune appeared for the railway company. After hearing the arguments of counsel for both parties the Court unanimously decided in favour of the Council on the three points of law raised in the special case. Shortly the points decided were as follows:—(1) That the Tribunal having decided that the buildings the subject of the architect's certificate were situate in the section CC to DD, any decision by them as to any other portion of the road was in excess of jurisdiction, notwithstanding that the superintending architect had included such other portion in his certificate. (2) That the point taken by the Tribunal in regard to the section AA to CC was never before them, and that they had no right to come to a decision upon it without any indication to the parties that they were proposing to decide that question. (3) That the Tribunal had no jurisdiction to decide whether certain houses indicated by them in section AA to CC were or were not situate in the Euston Road as the matter was not before them. The Council's appeal was therefore allowed, together with costs against the Metropolitan Railway Company in the Court of Appeal and the Divisional Court, including the costs of obtaining the special case and of the application for and obtaining the order for a mandamus to state the case.

The Herts C.C. has authorised the surveyor to obtain tenders for putting the Bovingdon school building into satisfactory sanitary condition and repair.

At a meeting of the Senate of London University last Wednesday afternoon the resignation by Lord Reay of his membership of the Senate was reported, and Mr. Andrew T. Taylor, F.R.I.B.A., was co-opted to represent University College for the remainder of the period 1917-21.

At the autumn Court of the Paviors' Company held at the Cannon Street Hotel on Friday last, Mr. George M. Burt, the Master, said they were very anxious to take part in reconstruction after the war. The company had a number of members who were practising paviors, and it was up to the Guild, the contractors, local authorities, and others to see that there was a job ready for every man connected with the industry on his return from war service.

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December 4, 1918. Volume CXV.—No. 3335.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

Government Housing Scheme, Well Hall Estate, Woolwich. Six views of various houses and the working drawings of two blocks of dwellings erected in the Downman Road. Plans and Elevations. Sir Frank Baines, C.B.E., M.V.O., H.M. Office of Works, Architect.

Bishop's Throne, Sediliae and Panelling, St. John's Church, Peterborough. Mr. Cecil G. Hare, Architect.

Putteridge Park, Luton, Bedfordshire. Elevation of the East Wing and Sections. Messrs. Sir Ernest George, R.A., and A. B. Yeates, FF.R.I.B.A., Architects.

Currente Calamo.

Engineers signing contracts of service with their employers can be compelled to keep to them when they are not unreasonable in the eye of the law. This is so especially where trade secrets or manufacturing processes are involved. Invention as applied to the development of industry in metals and other building materials is likely to have a wider range than ever in the new times coming. Service agreements are being made so as to prevent employees who learn secrets during their employment from using them afterwards to the prejudice of their true discoverers. The recent case of "Forster and Sons, Limited, *v.* Suggett" shows how the Courts do their best to strike a just mean between the freedom of servants and the fair rights of masters. This was an action by the plaintiffs, who had glass and engineering works in Lancashire, to restrain the defendant from divulging secrets of their process of manufacture which he had learnt from them while in their service. But the agreement between them, besides protecting their trade in other secrets, went on to provide that the defendant should not, for five years after leaving their service, engage in any way in any glass-making business in the United Kingdom. The defendant had left plaintiffs' employment, and as an answer to their claim for an injunction, he said the agreement was invalid because their restrictive covenant was bad as being unreasonable and as in restraint of trade. The true point was whether the defendant while in plaintiffs' service had only gained in skill and experience, or whether he had acquired a knowledge of their secret processes of manufacture which he could rightly be prevented from using elsewhere. The question was one of some difficulty, as these two things often ran into each other. But in the end Mr. Justice Sargant granted an injunction which will restrain the defendant from using his acquired knowledge and skill in regard to the manufacture of various forms of glass for five years, with all usual costs.

Most people will agree with Lord Harcourt, who urges in a letter to the *Times* that one of the first, though minor, services which we could now render to our Dominion, Colonial, and American guests would be to open to them at the earliest moment, and whilst there is yet time, our unrivalled national museums and galleries in London. We have heard with as profound dismay as Lord Harcourt that H.M. Government have decided, as regards at least one of them—the Wallace Collection at Hertford House—that it should remain closed to the public for an indefinite time in order to house a Government Department which is even yet not fully installed there—we believe a new branch of the Ministry of Munitions, which is to deal with, or create, its accounts. Others of our national collections are similarly occupied: the British Museum, the National Portrait Gallery, the Victoria and Albert Museum, the London Museum at Lancaster House, and all of them ought to be immediately restored to the public. Their closure was, for the most part, unnecessary, and their continued occupation by soft-jobbers is a scandal.

Among the permanent memorials of the Great War not the least valued will be the spots marking the last resting-places of our fighting heroes who, during the four and a half years' struggle for liberty and justice, made the supreme sacrifice. The report of Sir Frederic Kenyon, Director of the British Museum, on the architectural treatment and the laying out of the cemeteries where men of the British race have fallen, has been generally adopted by the Commission, acting under the authority of the Imperial War Conference. Not a few relatives have been looking forward to placing a memorial of their own choosing over the graves which mean so much to them, but the Commission has laid down the principle of equality of treatment, feeling "that where the sacrifice had been common, the memorial should be common also; and they desired that the cemeteries should be the symbol of a great Army and a united Empire." As a central monument in each cemetery Sir Edward Lutyens, A.R.A., has proposed "one great stone of fine proportions, 12 ft. in length, lying raised upon three steps, of which the first and third shall be twice the width of the second, and that each stone shall bear, in indelible lettering, some thought or words of sacred dedication." This stone will be on the eastern side of each cemetery, and the graves will lie before it, facing east as the Army now faces. Either over the stone or elsewhere will be a small building where visitors may gather for shelter or worship and where the register of the graves will be kept. At another prominent spot will rise the Cross as the symbol of the Christian faith and of the self-sacrifice of the men who lie beneath its shadow.

There is an immense amount of work which must be done at once for the benefit of the Decorating Trade in the London area, such as pressure being brought upon the Government to give an early release of soldiers who are painters by trade and of controlled materials; arrangements for the absolute adherence to agreed rates of wages and hours of work; and many other principles and practices of which the grievances of free estimating and grading of workmen are examples. Success in these and many other important matters is hopeless unless the whole trade is united. The Decorating Trade is on the eve of the greatest boom ever known. The Bill for the Temporary Regulation of Wages provides that the present rate of wages shall be paid for a period of six months. Trouble at the end of that time is inevitable, unless both employers and employees are thoroughly organised, and in the meantime have set up joint councils who will deal with the subject. Every employing decorator who neglects to become a member of the London Association of Master Decorators will, whether intentionally or not, actually retard the earnest efforts which have been made for the uplifting of the trade. Every decorator who does join will thereby throw his weight, interest, and influence in the scale towards the common good. Although he will only have done what might be said to be a distinct duty, he will benefit himself while benefiting to some extent the whole trade. Application *at once* for membership should be made to Mr. Arthur Seymour Jennings, Organising Secretary, and Editor of *The Decorator*, 365, Bank Chambers, 329, High Holborn, W.C.1. We may remind readers that they will be likely to obtain early release from the Army of painters formerly in their employ, provided that they fill up Form 406, to be obtained at any Labour Exchange. We should also add that the Association has agreed to assist the journeymen as far as possible to strengthen their trade union.

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A most useful and handy series of tables for the use of all using their fabric for different classes of floors over various spaces has been issued by the British Reinforced Concrete Engineering Co., Ltd., of 1, Dickinson Street, Manchester, which will be of considerable service to all architects, engineers, and builders. They are mounted on flexible canvas, and can be easily carried in the pocket for convenient reference. The figures in each table give the standard reference number of B.R.C. fabric to be used for the purpose of loading indicated at the head of the table. For instance—to carry a safe superimposed load of 2 cwts. per sq. ft. over a span of 8 ft., using concrete 6 in. thick, No. 8 standard fabric (the black figure stressed to 25,000 lbs. per square inch) should be used. For a stress of 20,000 lbs. per square inch the blue figure—No. 7 fabric—and for 16,000 lbs. per square inch the red figure—No. 5 fabric—would be used. No. 8 standard (see table of standard sizes) consists of longitudinal wires No. 4 gauge, spaced 3 ins. apart, with transverse wires No. 10 gauge spaced 16 ins. apart. If the thickness of concrete is not determined by other considerations, it is most economical to select the size of fabric immediately above the heavy black line (or the blue or red line for the lower stresses), and use the corresponding thickness of concrete shown in the left hand column. Other memoranda relating to the type of wire used and safe working stresses are given; the latter likely to be of special service in cases where local authorities insist on conditions which are really unnecessary, but which may be safely and advantageously met by means indicated.

On Monday last, at the ordinary business meeting of the R.I.B.A., the following revised text of the proposed Act for the Acquisition of Light (Restriction) Bill, 1918, to amend the law relating to the acquisition of light, was passed, on the motion of Mr. H. T. Hare, the President, and seconded by Mr. Walter Cave:—1. (1) After the commencement of this Act a right to the access and use of light to or for any building shall not be acquired by the mere enjoyment thereof for any period of time, and no presumption of a grant of a right to the access and use of light shall, after such commencement, arise by reason only of the enjoyment of such access and use for any period. (2) This section shall not apply to any right to the access and use of light which shall have become absolute and indefeasible before the commencement of this Act, or to any inchoate right to the access and use of light which shall have been acquired by the actual enjoyment thereof for the full period of twenty years before the commencement of this Act without interruption and, accordingly, every such inchoate right shall be capable of becoming absolute and indefeasible in the same way as if this Act had not been passed. 2 (1) Section three of the Prescription Act, 1832, is hereby repealed, but this repeal shall not revive any custom referred to in that section. (2) Nothing in this Act shall operate to bring any right to the access and use of light to or for any building within the provisions of Section One of the said Act of 1832. 3. This Act shall not apply to Scotland or Ireland. 4. (1) This Act may be cited as The Acquisition of Light (Restriction) Act, 1918. (2) This Act shall come into operation on the First day of January, One Thousand Nine Hundred and Nineteen. The decease was announced of Mr. Norman Clayton Hadlow Nisbett, architectural surveyor to the Dean and Chapter of Winchester Cathedral, Associate, elected 1885.

BUILDING CONSTRUCTION FOR WORKING-CLASS HOUSING.

The report of the committee appointed by the Local Government Board in connection with the provision of dwellings for the working classes in England and Wales and Scotland has been issued,* and its chief value to those actively engaged on undertakings of this character will be found in the pages which deal with questions of building construction, and give a detailed review of various methods of securing economy and despatch in the carrying out of dwellings of this class. The Committee included three architects, viz., Sir Aston Webb, R.A., Sir Frank Baines, C.B.E., and Mr. Raymond Unwin, F.R.I.B.A., as well as two engineers, Messrs. William Fairley and J. Walker Smith, M.M.Inst.C.E.

In the summary at the commencement of the "Report" it is stated that "All the witnesses, whether representing local authorities, public utility societies, working-men, architects, builders, or property owners, laid great stress upon the financial side of housing," but the Committee refrained from discussing all questions of finance, because the members considered that branch of the subject beyond the scope of the terms of reference under which they were appointed, although it is apparent from the evidence brought before the Committee that before the war the financing of building schemes had become exceedingly difficult, it being "the opinion of many of the witnesses that the former methods of obtaining money for building purposes which had been so largely discontinued before the war were not likely to be again resumed, and that if any adequate housing schemes were to be carried out either by local authorities or by private enterprise, State loans would be a necessary condition." Reference is also made to the Lumsden case, which all the witnesses of practical experience naturally declared a serious injustice and was highly prejudicial to the trade of house building. The question of cost, of course, occurs incidentally under various sections. For instance, in No. IX., headed "Economy in Construction," where some very suggestive tables are printed, No. 1 is based upon priced bills of quantities, giving the proportionate cost of a cottage, represented by different materials and labour, set out in a percentage form showing their relation to the total cost. No. 2, by way of alternative, by the same ratio sets out the actual cost of a row of 14 suburban cottages built by direct labour, the labour and materials given separately. The highest figure represented in any one trade is that of the bricklayer, which includes much besides the actual shell of the building, and this only represents 31 per cent. of the total cost of the building; while it is seen from Table 2 that bricks only represent 10 per cent. of the total cost. The Committee state, "When, therefore, it is suggested that the adoption of certain concrete blocks for walling in place of brickwork can result in a saving in the total cost of 25 per cent., a suggestion which is not infrequently made, it must be obvious that no such saving on this one item is possible. None the less, it remains true that the bricklayers' trade, taken as a whole, is one of the largest, and that the woodwork represents the next most important element of cost." This conclusion, patent to everyone, leads up to the consideration of possible substitutes generally available or locally advantageous for bricks or stone for cottage walling, particularly concrete, and the finding of substitutes for timber in cottage construction.

The present shortage of bricks, and the difficulties of transport thereof, doubtless render emergency housing difficult and expensive. It is not surprising therefore to learn that several witnesses laid great stress upon the importance of adopting methods to which both builders and workmen were accustomed in order to insure economy and dispatch. Large schemes entrusted to experienced contractors having opportunities of assembling skilled supervision, labour, materials, and plant for particular work might be managed with profit to all concerned; whereas a small undertaking, probably if attempted by new methods, would prove correspondingly costly. The primary conditions of climate determine the types of building applicable and govern the thickness and forms of walls. These again are controlled by the exigencies of economy. The actual cost of a stone wall per square yard may be much less than the cost of brickwork, and yet the cost of a cottage with stone walling may be greater, owing to the use of dressed masonry for the openings and quoins, increasing the roof area and width of the footings. Moreover, various forms of door and window frames adapted to stone have to be provided; whereas if standardised concrete window frames could be built directly into the rubble walling, the benefit of the cheaper stone-walling would be to some extent realised. Standardisation of designs for houses is not to be reckoned economical, because it must involve neglect of many opportunities for considerable improvements in the arrangement of the house and the neglect of considerations of aspect, the nature of site, and the position of each individual dwelling. Typical plans adapted to main circumstances will be required for reference, though care must be exercised to prevent them from becoming stereotyped. The standardisation of bricks was, of course, material to much of the evidence, and the question of fixing the shape and sizes for doors and windows, differentiating their heights to their widths, and the standardisation of joinery generally, if not by any means new, is, of course, pertinent, as also the determining of sizes for baths, sinks, ironmongery, and other fittings. The compilers of the report recommend that such standard prices should be worked out carefully, and samples placed on the market strong in make, good in design, and involving a minimum of cost in maintenance.

The information given as to foundations and walling thicknesses, condensation and ventilation, as well as interior surface finishings, may not be new, but cannot fail to be useful. Although brick earth abounds in this country in variety and to an extent found perhaps in few other countries, there are large districts

* Parliamentary Paper CD 9191. Published by H.M. Stationery Office, Imperial House, Kingsway, London, W.C.2, or through any bookseller. Net price, one shilling.

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devoid of suitable material for the making of reliable bricks, though gravel and sand may readily be found. The various aggregates available for concrete are tabulated, and the chemical action owing to the presence of sulphur, lime, coal, and other impurities is considered. The accidents which have happened through the use of concrete slabs only partly matured or through breeze concrete floors laid *in situ* having expanded and burst out the main walls are alluded to, mention being made that several engineers in their evidence stated that on account of such difficulties they had given up using these materials for concrete and relied entirely on sand, crushed stone, and gravel. Others, equally eminent, contended that with proper care slag clinker and breeze might be safely used, though any material containing lime, coal, or more than 2 per cent. of sulphur should be looked upon with suspicion. The *in situ* method of concrete construction is handicapped by the cost of centering, shuttering or moulds, as well as the liability to crack. Repairs are difficult, chases for pipes, etc., are not easily made, and fixing provision is a trouble, while alterations or additions are most awkward to effect. Casting in horizontal fashion is discussed, and reinforced piers or block building naturally are dealt with, and cavity walling for cottage construction in concrete is advocated by the majority of the experts, as thereby the danger of a damp house is reduced to a minimum.

Even in stone-country districts brick cottages have often proved cheaper to erect than stone ones. Questions of transit, the great demand for bricks and bricklayers, and, among other factors, the unprecedented number of cottages required in rural areas have to be taken into account. Besides, local custom prevails in some stone districts that a stone wall must be built in a certain manner, involving much labour and dressing, whereas hammer-faced work is amply strong and better in character with cottage walling. The report anticipates that in future concrete as a substitute for timber and in place of brick and stone for walling will be largely used. This will involve a new type of designs adapted to that material. Experimental houses handled in this way are advocated with the view to ensuring satisfactory types in these lines. In all housing schemes submitted to the Local Government Board for approval it is advocated that a competent architect shall have been employed and that his duties shall include the preparation of the lay-out plan and the design and planning of the houses. The report includes a summary of conclusions and recommendations arrived at.

PUBLIC UTILITY SOCIETIES.

An interim report on Public Utility Societies was issued last Friday by the Housing (Financial Assistance) Committee, which was appointed "To consider and advise on the practicability of assisting any bodies of persons (other than local authorities) to build dwellings for the working classes immediately after the war, whether by means of loans, grants, or other subsidies, and whether through the agency of State or municipal banks, or otherwise."

The Committee express the opinion that the facilities in regard to loans should be increased and improved. Recommendations under this head suggest that loans should be made to public utility societies by the central authority at the lowest rate at which the State can afford to lend. As between loans for different periods, the longer duration of the loan should not be taken as a reason for fixing a higher rate of interest. Loans should be granted for fifty years in all cases of approved schemes, provided that the houses are certified to be of a sufficiently substantial character.

The report states that public utility societies are not likely to make any appreciable contribution to housing during the "emergency" period without substantial subsidies. If these are not granted, the committee add, their obvious course would be to wait until conditions are more conducive to an economic return.

They recommend that grants should be made by the State of a capital sum equal to 75 per cent. of the difference between the approved cost and the estimated value of the houses on their completion. "Approved cost" for this purpose should be the actual and ascertained cost of an approved scheme carried out in an approved manner.

There is a minority report, signed by Mr. Richard Barrow, Mr. J. A. E. Dickinson, Sir Harry Haward, and Mr. R. H. Marsh, who dissent from the view of the majority on the matter of subsidy. They recommend that the full cost of a housing scheme to be carried out by a public utility society during the emergency period with financial assistance from the State should, in the first instance, be met out of capital raised by the society; and that the State should advance 75 per cent. of the cost on loan for an equated period not exceeding fifty years, leaving 25 per cent. to be raised by share capital and loans by private subscription.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The following are architects' fees for housing schemes, sanctioned by the Royal Institute of British Architects:—

In fixing the scale of charges for the development of land, or for housing schemes, special arrangement will usually be required according to circumstances, but for ordinary cases the following are the charges:—

(a) Housing Schemes and Laying-out Estates.

For the preparation of a plan or scheme from existing maps, showing roads, building plots, and buildings in block, and including conferences with officials of local authorities, but not including surveying, levelling, contouring, or the preparation of detailed plans of buildings, the remuneration is as follows:—

	Per acre.
For the first 25 acres	£2 2 0
On the next 275 acres	1 1 0
On the remainder	0 5 0

Minimum charge, 25 guineas.

(b) Roads and Sewers

For preparing working drawings and specification of roads and sewers, obtaining tenders and advising on the same and in the preparation of contract, furnishing to the contractor one copy of the drawings and specification, general supervision as before defined, issuing certificates, and passing and certifying the accounts, the charge is 5 per cent. upon the cost of the works. Should the works not proceed after the preparation of the drawings and specification the charge is 3 per cent. upon the estimated cost.

(c) Buildings in Housing Schemes.

In housing schemes the charge is 5 per cent. on the first twelve houses, 2½ per cent. on the next sixty, 1½ per cent. upon the remainder. This percentage covers the ordinary variations in type of house and such minor modifications as are made to avoid monotony in appearance.

Where the local authority assumes responsibility for the supervision and carrying out of the work, the above fees may be reduced to one-third.

This scale is not necessarily applicable if the carrying out of the work is effected in instalments, and consequently deferred over a long period of years.

Our Illustrations.

GOVERNMENT HOUSING SCHEME, WELL HALL, WOOLWICH.

Last week we gave some views and geometrical drawings of these houses built at Woolwich, and also a descriptive article of the work as carried out. Sir Frank Baines, C.B.E., M.V.O., H.M. Office of Works, is the architect.

BISHOP'S THRONE, SEDILIAE, AND PANELLING IN CHANCEL, ST. JOHN'S CHURCH, PETERBOROUGH.

The rood screen of this church, designed by Mr. Cecil G. Haxe, the architect, was illustrated in our issue of April 10 this year, and on July 5 we gave a drawing of the choir organ. To-day we complete the series of the architect's details by giving drawings of the Bishop's Throne, wall panelling, and the sedilae of the same building. Some few notes appeared with the previous illustrations.

PUTTERIDGE PARK, LUTON, BEDFORDSHIRE.

Last week a sheet of details of the billiard room bay of this house was given. To-day we include a further page giving the elevations and sections of the east front of Putteridge Park, erected at Luton for Mr. T. M. Clutterbuck from the designs of Messrs. Sir Ernest George, R. R. and A. B. Yeates, FF.R.I.B.A. Other general drawings and plans of the house will be found in our issues for August 28 and September 11 last. The builders were Messrs. Holland and Hannen.

COMPETITIONS.

"OWEN JONES" PRIZES.—The Council of the Royal Society of Arts are now prepared to offer six prizes in each of the years 1919, 1920, and 1921 for the following subjects:—In 1919, architectural decoration, woodwork and cabinet work, and textiles; in 1920, domestic pottery and table glass, metalwork, and textiles; in 1921, book production and ornamental leatherwork, wallpapers and other mural decorations, and textiles. The competition is limited to students of schools of art. Competing designs for 1919 must be sent, carriage paid, and labelled "Owen Jones Prize Competition" on the outside, to the Director and Secretary, Victoria and Albert Museum, South Kensington, S.W.7.

The death is announced of Mr. Percy Hamilton Kingsford, surveyor and land and estate agent, of Canterbury, on Wednesday last. The deceased, who was forty-three years of age, was a son of the late Montague Kingsford. He became a P.A.S.I. in 1896, and was elected a Fellow of the Surveyors' Institution in 1901.

A largely-attended public meeting was held at Lancaster last Wednesday evening to launch a scheme to provide a settlement for disabled service men. The plans and drawings as arranged provide for an artistic memorial, cottages, residences, and gardens for married men, hostels for single men, workshops, etc.

It is proposed to commemorate the services of the Royal Welsh Fusiliers by establishing some permanent memorial in each of the six counties of North Wales, taking the form of some monument or other work of art. It is hoped eventually to raise at least £75,000. Subscriptions should be sent to the hon. treasurer of the memorial at the Barracks, Wrexham.

The Director-General of Ordnance Surveys states that auctioneers or solicitors have been making direct application to the Department for permission to use Ordnance maps for reproduction in sale particulars. Difficulty arises by the failure of such applicants to notify the Ordnance Survey Office of their instructions to their printers to pay the royalty. The Director-General states that no application by auctioneers or solicitors to him is necessary, or should be made, for any plan printed by any authorised firm is covered by the general permission granted to such firms.

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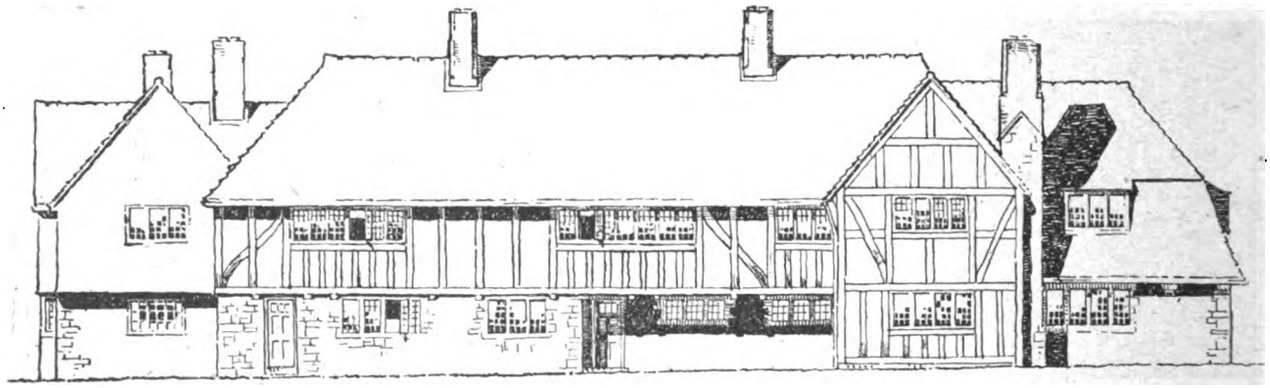
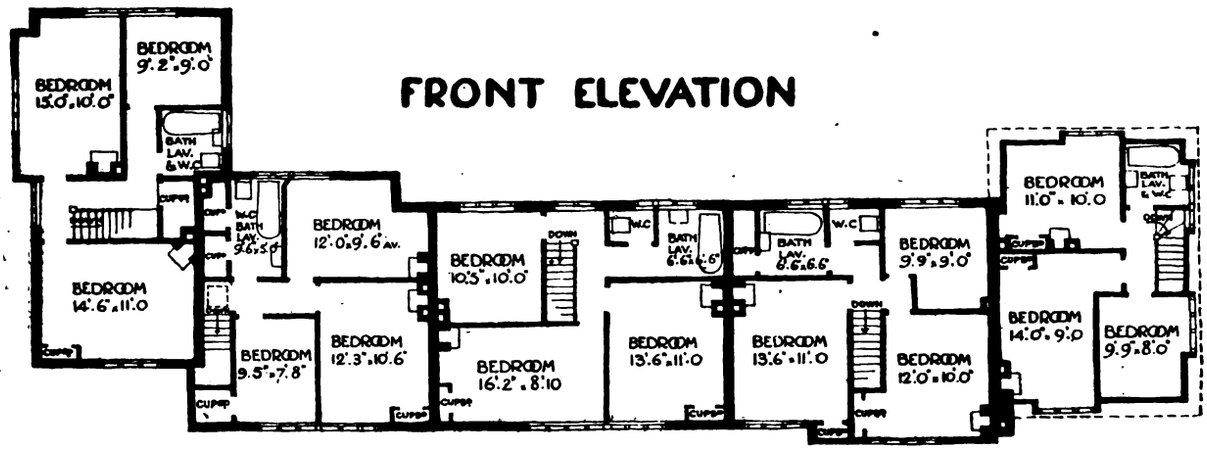
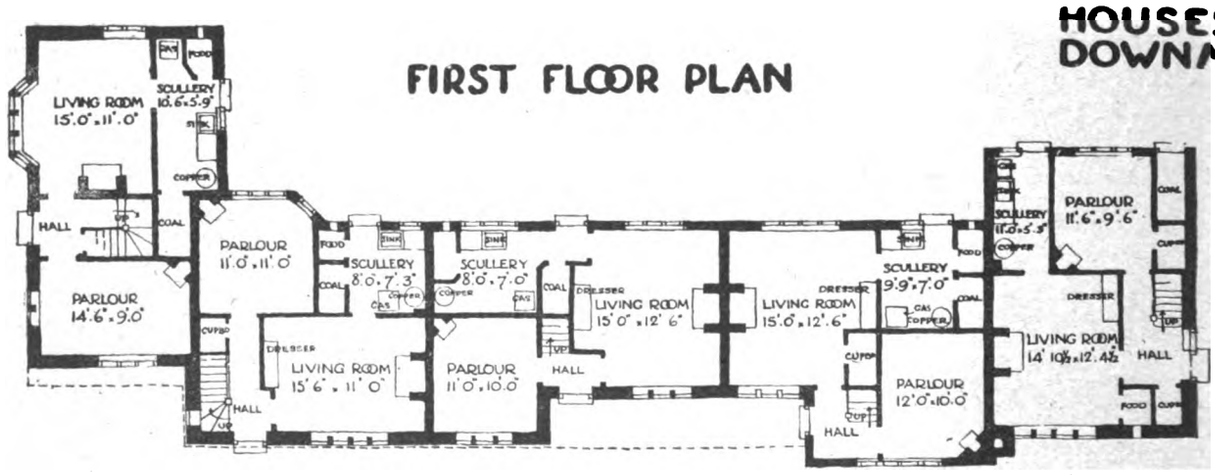


FRONT ELEVATION



FIRST FLOOR PLAN



GROUND FLOOR PLAN

10 0 10 20

SCALE EIGHT FE

HOUSES
DOWNMA

GOVERNMENT HOUSING SCHEME, WELL HALL

Sir FRANK BAINES, C.B.E., M.V.

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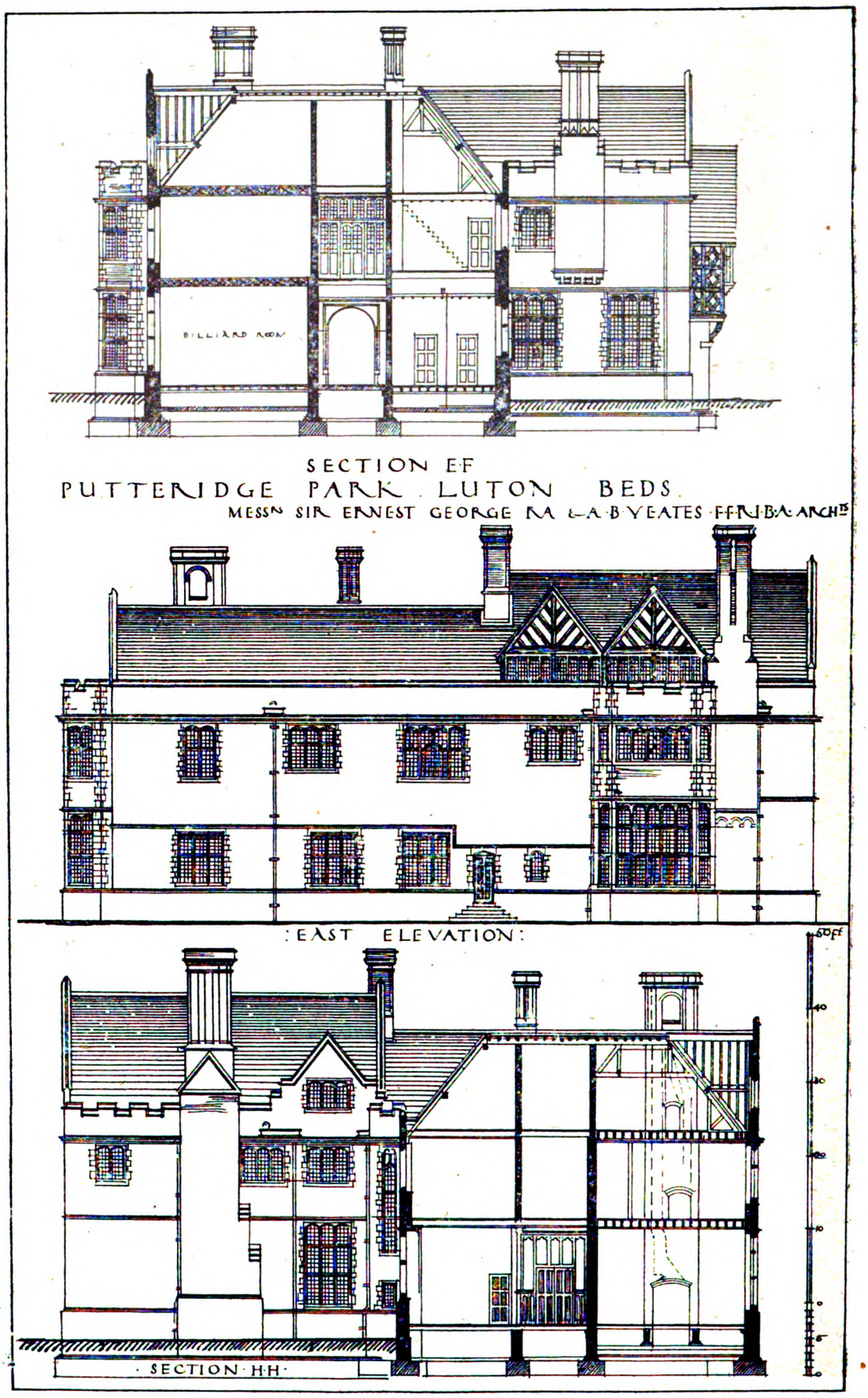

EAST ELEVATION AND SECTIONS, PUTTERIDGE PARK, LUTON.

Messrs. Sir Ernest George, R.A., and A. B. Yeates, FF.R.I.B.A., Architects.

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VARIOUS HOUSES.

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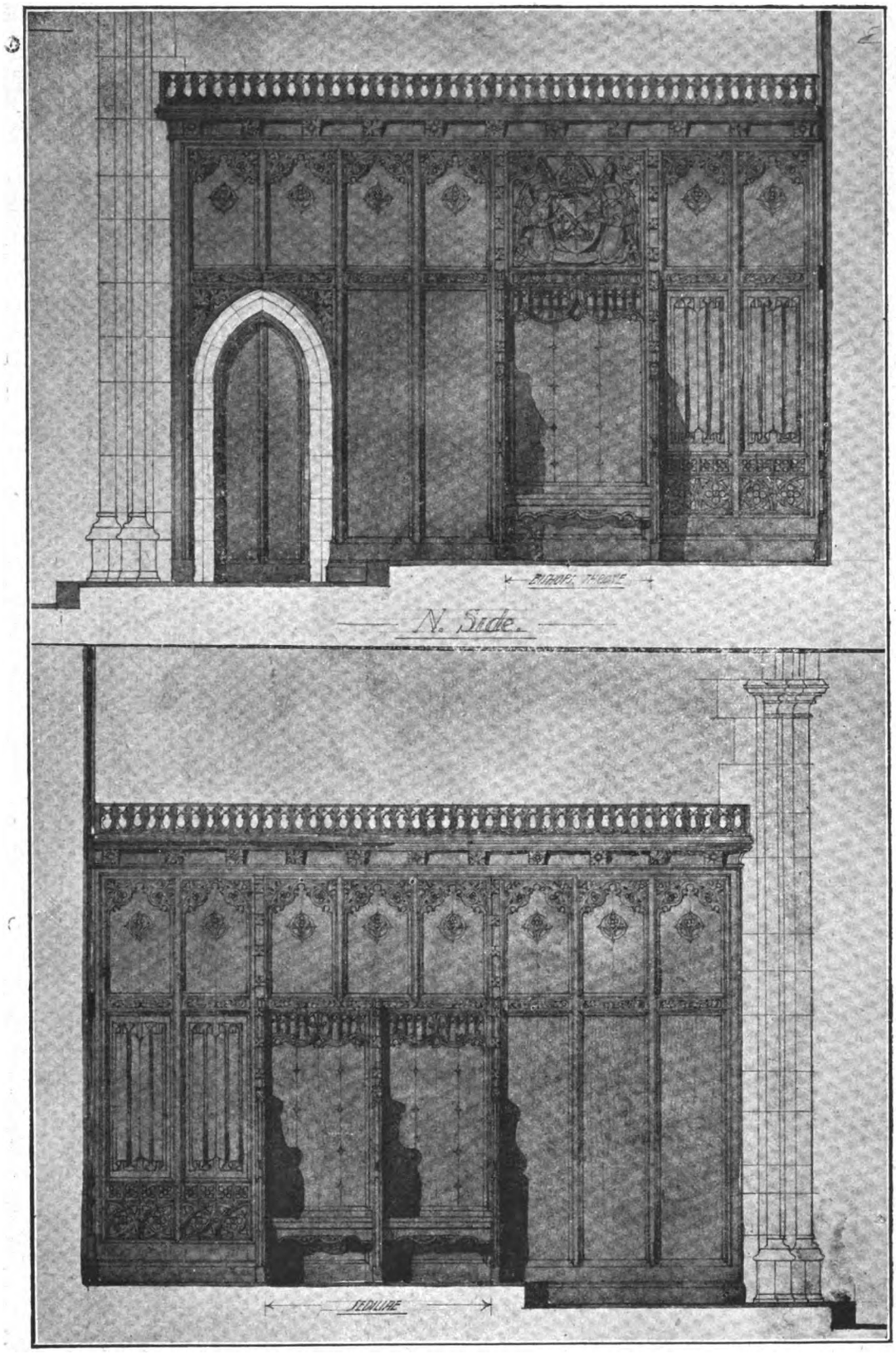

BISHOP'S THRONE, SEDILIÆ AND PANELLING IN CHANCEL, ST. JOHN'S CHURCH, PETERBOROUGH.

Mr. Cecil G. Hare, Architect.

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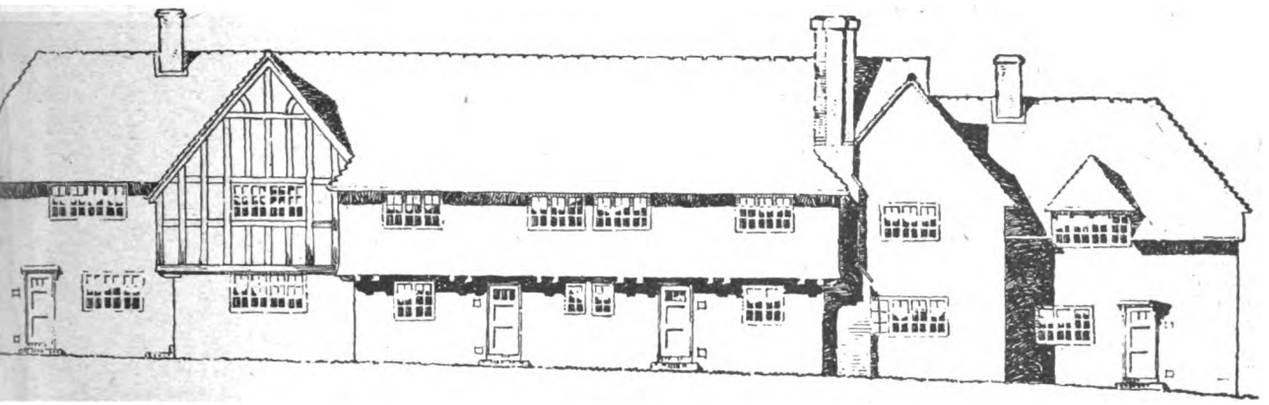
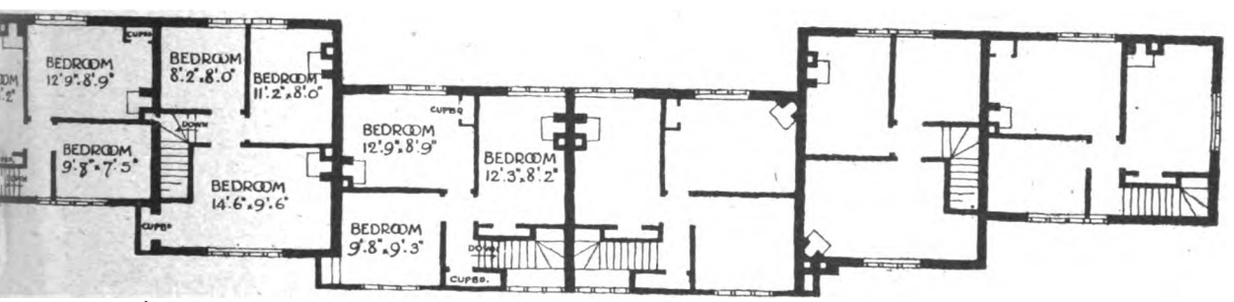
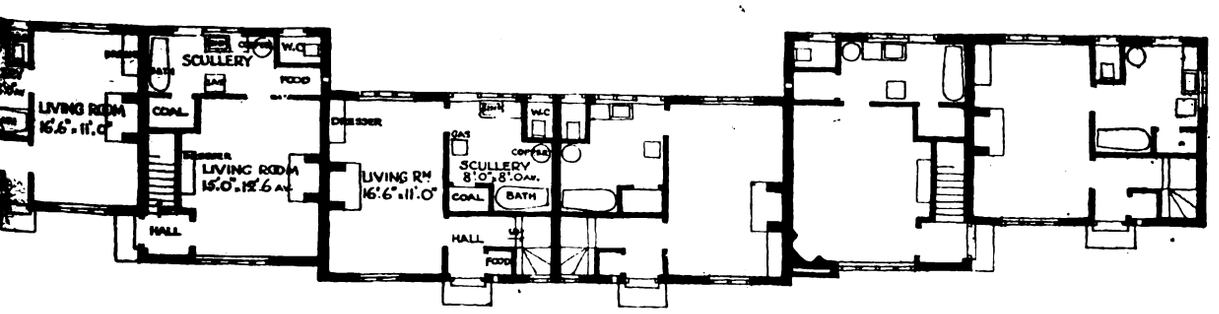


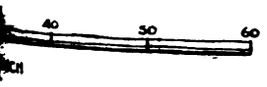
FRONT ELEVATION



INC
OAD

FIRST FLOOR PLAN





GROUND FLOOR PLAN

TE, WOOLWICH: HOUSES IN DOWNMAN ROAD.

M. Office of Works, Architect.

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Correspondence.

A NATIONAL MEMORIAL AND THE HOUSING PROBLEM.

To the Editor of THE BUILDING NEWS.

SIR,—It may be assumed that the new Parliament will take an early opportunity of considering what form a National Memorial should take to honour not only those who have fallen, but also those who have taken part in the great struggle of Right against Might.

May I venture to bring before your readers a scheme which may be thought worthy of some consideration? It seems to be generally agreed that the memorial should be of a practical as well as of a monumental character, and this practical form cannot, I think, be better shown than by taking a wide and generous view of a question now before the public—namely, the housing problem. The fact that it is necessary to provide at once 300,000 houses for the accommodation of the working classes shows how inadequately they were housed before the war, and proves that the nation must take immediate steps to rectify this deplorable state of affairs. While the majority of the homes are doubtless needed for country districts, the fact remains that the slums in London are a disgrace to the community and must be abolished, and decent residences for the working classes take their place. The doing of this would be a practical side of the memorial project.

I venture to suggest that the area covered by Charing Cross Hotel and Railway Station, together with Villiers Street, and perhaps Buckingham Street, would form a site for a National Memorial worthy of the nation and the cause.

It would, of course, be necessary to remove the railway station to the south side of the river. This would give the opportunity of erecting a much-needed bridge. It will be remembered that when the station roof collapsed in 1906 many proposals were made to this effect. I myself made a proposal in my opening address as President of the Royal Institute of British Architects, which was illustrated in a weekly paper. The railway company, however, objected, chiefly on the grounds that their suburban traffic would suffer. This could now be obviated by continuing the tube railway from Aldwych to Charing Cross, and thence to the south side of the river.

A new bridge (why not St. George's Bridge?) should, of course, form a distinctive feature of the memorial, and the southern end of the bridge might have a distinctive feature in the form of a memorial as a tribute to all our Allies.

But, however magnificent a form be given to the memorial, I see no reason why it should not be combined with projects of a utilitarian nature, and I venture to think no project can be more worthy of consideration than the housing scheme to which I have referred above.

On the south side of the river is a crowded district composed mainly of small unhealthy houses, homes of the working classes, and nowhere is it worse than by the river side. There could be no better point of beginning a housing scheme than here.

I would suggest that the Government should acquire a strip of property—say from the site of the London County Hall, now in course of erection, as far east as Southwark Bridge to a depth of 300 or 400 yards, on which a beginning of a great housing scheme could commence, a housing scheme not only for those who could pay a rental of £25 per annum for a flat, but also for those who could afford a higher rent, extending perhaps to £100 per annum. There might also be space allotted for buildings other than residences, such as a Shakespeare National Theatre, the London University, together with students' quarters, etc., etc. The residences for the working classes would, of course, come under the Government proposals in their housing scheme.

With a structure of a grand monumental character emphasising the entrance to the bridge, a similar emphasis on the southern side, with an embankment to St. Paul's Bridge, I think it possible that a great monument of the great war could be consummated.

May I venture to further trespass upon your space by reopening the question of a barrage across the Thames for the keeping up of the upper waters of the river with the purpose of rendering it more easy for traffic and for pleasure purposes? This question was fully discussed at meetings taking place in the rooms of the Institute of Civil Engineers in 1906.

Before old London Bridge was demolished, it in itself acted to a great extent as a barrage. The piers took up a much larger space than the arches, thus forming at the ebb tide an impediment in the nature of a weir somewhat similar to those necessary for an ordinary lock. So rapid was the ebbing flow of water that it was only experienced watermen who could shoot the rapids. The consequence was that there was very much less rise and fall of water above London Bridge than below it, and this was an especial benefit to those who used the river for business or pleasure purposes. Pepys mentions more than once of taking a "pair of oars" to proceed to some business appointment. He does not seem to have thought it necessary to inquire as to the state of the tide. This would be necessary now, as I found from experience gained many years ago when I frequently rowed on the river starting from Essex Stairs.

Instead of a fall and rise of 17 to 19 feet each tide, this could be reduced by means of a barrage to 8 or 9 feet, and the river once more become a pleasure resort.

The proposed building of St. Paul's Bridge may be begun in the near future, but it should not be too late to alter the design so that it should form a Barrage—say, with three arches, each one forming a lock, the weir and backwater being provided for on the South side.

The bridge could also be made wide enough to allow of covered ways and shops on each side. An arrangement of this kind would make Southwark once more an integral part of the City of London, an advantage not gained to the same extent by an open bridge.

In considering the probable cost of the scheme I have sketched, it should be borne in mind that the City will be at the cost of building St. Paul's Bridge, the L.C.C. should bear the cost of the Charing Cross Bridge, and the Nation would provide for the monumental work and the housing problem.

With an embankment and a barrage as suggested, the river would become vastly more suitable both for traffic and for pleasure boating. In the latter connection boating clubs might be founded, and the working man, housed on the South embankment, would probably institute his own boating and swimming clubs, etc., thus taking, as his rightful due, as far as the pleasures of the river are concerned, his "place in the sun."

I am, Sir, yours truly,
THOS. E. COLLCUTT,
Past President of the Royal Institute of British Architects.
36, Bloomsbury Square, W.C.1.

ARCHITECTS DEMOBILISATION COMMITTEE.

Sir,—All communications relating to the demobilisation of architects should be addressed to the above Committee at 35, Bedford Square, and not, as stated in the Government notice, to the Architectural Association.

The Demobilisation Committee is a Sub-Committee of the Architects War Committee, which for its own convenience and by courtesy of the bodies concerned, uses for different purposes the premises of the Institute, the Architectural Association, and the Society of Architects.—Yours faithfully,
HENRY M. FLETCHER (Chairman).
Architects Demobilisation Committee,

OVERSEAS TROOPS AT CHRISTMAS.

Sir,—At this time of rejoicing every one of us desires to express gratitude to those who have helped to protect our homes. Thousands of overseas troops will be on leave over Christmas and unable to mingle with their own folk at home. I desire to appeal to your readers on behalf of the Rotary Club of London to open their homes to one, or preferably two, of these boys. All difficulties are surmounted. The characters of the guests are vouched for, the railway fares are paid, they will have their food ration books, and if the hostess has servant difficulties, nothing gives the guests greater pleasure than to assist as they were accustomed to do in their own homes. We have to bear in mind that to them even a humble home is as a palace compared to the average hut or canteen.

Will those of your readers who can help please communicate with me by return?

Trusting that this appeal to my fellow-countrymen will not be in vain,—I am, yours, faithfully,

ANGUS R. WALBROOK,
Director, Lewis Berger and Sons, Ltd.,
Chairman, Speakers' Committee, London Rotary Club.
Homerton, London, E.9.

THE SURVEYORS' INSTITUTION.

(Continued from page 365.)

QUALIFICATIONS AND DUTIES.

The desire of the Council to raise the intellectual standard of the profession was further indicated in 1905, when they decided to place at the command of those about to adopt it the highest educational facilities which the country could offer. Scholarships were established tenable for three years at any recognised University in the United Kingdom, and in any course approved by the Council as bearing on the training of a surveyor. Again, the effect of the war has been felt in cutting off the supply of suitable candidates for the competitive examinations, and, indeed, at some Universities in closing down the approved courses of instruction. It has, therefore, been considered advisable to withdraw the offer until the return of happier conditions, but I am pleased to say that, on the whole, those who have held the scholarships have shown by their later careers that they have benefited by the advanced instruction they received, several having obtained good posts at home or abroad with every prospects of a distinguished future.

Apart from the indirect advantage which educational centres have doubtless derived from the scholarships, they have in certain cases benefited by direct grants from the Institution towards meeting the costs of new schools of instruction in subjects cognate to the Institution syllabus. The more important of these are shown in the following schedule :—

Cambridge University Department of Agriculture	£1,000
Cambridge University School of Forestry	210
Oxford University	210
Royal Agricultural College, Cirencester	210
Rothamsted	105

I must not omit from my reference to the manner in which this object of our founders has been carried out a word or two as to the beneficial influence of the meetings held both at headquarters and in the provinces. Papers on every conceivable subject connected with the profession have been read and discussed, and a mine of information is contained in our fifty volumes of "Transactions" and twenty-four volumes of "Professional Notes," which is hardly realised except by those who have had to study them.

I think, therefore, that we may justly claim that the first of the objects referred to by Mr. Lloyd has not been neglected, and I was pleased to see that what has been done in the direction of education was acknowledged in the report of the Agricultural Committee of the Ministry of Reconstruction, where, speaking of the education of land agents, it is specially stated, after a reference to the scholarships and our examination system, that "The Surveyors' Institution has, in fact, done great service in this whole matter."

I cannot leave the subject of professional education without impressing upon members the increasing importance which must attach to such qualifications in the future. The duties imposed upon surveyors and land agents become more and more exacting, and

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call for the highest possible technical training if success is to be attained. This perhaps is not difficult to understand if one considers the wide scope of the surveyor's business; speaking from a knowledge of that branch in which I myself mainly practice, an intimate knowledge of agriculture, forestry, building construction, accounts, local and imperial taxation, drainage, the Agricultural Holdings Acts, Acts for the compulsory acquisition of property, and other Statutes dealing with landed property, must be looked upon as almost essential; while some knowledge of such subjects as agricultural chemistry, geology and botany, water supply, sanitary science and local government is also necessary. The standard of our technical education must therefore, I think, tend to become even higher in the future than it has been in the past, and our examination syllabus may before long have to be revised in order to meet the ever-increasing demands on our profession. Certainly I believe this to be the case with regard to the land agency branch, and I have no doubt that it is almost equally so in connection with the Urban, Building, and Mining Divisions.

Nor has the need under the second heading, viz., (b) Social Elevation, by raising the status of the profession in the eyes of the public, been overlooked.

Even in the earliest days of the institution it was quickly recognised as a body from which practical and impartial information might be obtained on every subject connected with real estate. Few, if any, Commissions or Departmental Committees investigating such questions have sat during the past fifty years without the assistance of members being called in either as witnesses or as commissioners. I need not attempt a detailed list; it is enough to mention such diverse inquiries as the various Commissions into the State of Agriculture, the London Water Companies, the Disposal of Sewage, Town Holdings, Local Taxation, Afforestation and Coast Erosion, not to mention a whole host of minor inquiries ranging from Small Holdings to Building By-laws, and from Sales of Estates to the Public Health Acts.

It was, therefore, perhaps not surprising that the Institution early obtained statutory recognition, the first occasion being under the Metropolis Management and Building Acts Amendment Act, 1878, when it was appointed as one of the two professional bodies empowered to report to the Secretary of State upon any new bye-laws framed by the Metropolitan Board of Works. Later came the London Building Act, 1894, under which the duty of nominating a surveyor to sit upon the Tribunal of Appeal was imposed upon the Council; the London County Council (General Powers) Act, 1909, dealing with regulations for the erection of buildings in reinforced concrete; the Finance (1909-10) Act, 1910, under which the President of the Institution was associated with the Lord Chief Justice and the Master of the Rolls to draw up a panel of referees composed of members of the Institution or other qualified persons to hear appeals under the Act; the Defence of the Realm (Acquisition of Land) Act, 1916, which followed the precedent of the 1910 measure; and the Corn Production Act, 1917, in which the President is constituted the authority to nominate arbitrators to hear appeals against orders made by the Board of Agriculture or County Executive Committees under Part IV. of that Act, to mention the more important only.

Although it may seem rather wide of the subject with which I am now dealing, I cannot let slip this opportunity of impressing on those who may be nominated to act as arbitrators under the last-named measure the great responsibility which will attach to their decisions, and the need for treating the cases which come before them in a most careful and judicial spirit if the scales are to be evenly held between the State and the individual.

There have been other indications too that the surveyor's business has acquired an assured position during the past fifty years which it certainly did not possess in the first half of last century, and that the Institution is looked upon as its recognised centre

International conferences have been held in Paris and Brussels, in which representatives of the Institution took part; and in 1909, at the last Colonial Conference, the Institution, at the request of the Colonial Office, organised an important series of meetings, at which almost all the self-governing colonies were represented, to determine whether, and on what terms, reciprocity with regard to the examinations for surveyors might be arrived at between all parts of the Empire, a subject which had been placed upon the agenda for the Colonial Conference by, I believe, the Australian Government. An unanimous and valuable report resulted, and doubtless had not the next Conference been postponed owing to the war, the matter would have been taken further.

Even since I have been a member of the Council I have seen a marked change in our status. The value of the institution as a source of information, and the readiness with which the Council and members generally have, I am proud to say, shown in placing their knowledge at the disposal of the public, have led to increased demands upon their experience from both official and unofficial quarters; and although this may have made great calls upon the time of members acting upon committees, their services have been ungrudgingly given, and have indirectly benefited the profession by making its scope and activities more widely understood and by raising the social status of those who practise in it.

During the last four strenuous years this process of elevation has, if anything, been quickened. Surveyors, both in the field and in the less dangerous but hardly less exacting work at home, have taken their part in a manner which has been generally acknowledged. Time will not permit me to attempt any detailed statement of their work in connection with food and timber production, munitions, reconstruction, etc., but a perusal of the annual reports of the Council since 1914 will enable the reader to form a fair idea of the demands which have been made upon them and how those demands have been met.

(To be continued.)

PROFESSIONAL AND TRADE SOCIETIES.

LOYAL PLUMBERS.—The members of the Institute of Plumbers, Ltd., held their half-yearly meeting in the Guildhall, Lincoln, on the 21st ult., and considered at length important matters connected with their business. The Mayor (Councillor C. T. Parker) extended a cordial welcome to the delegates, and said he knew something of trade organisations: they were apt to look on others in the same trade as opponents, and jealousy crept in. But the more they got to know each other the better they would get on, and life would be all the sweeter for it. (Hear, hear.) The President (Mr. R. Gibbons, of Bolton) thanked the Mayor, and, speaking on the question of peace, said the Institute had sent a resolution to the King congratulating him upon the establishment of an issue so potent to civilisation. That morning his Majesty's private secretary wired: "The King thanks the Institute of Plumbers for their loyal congratulations on the success of our arms. His Majesty heartily joins with them in the hope that the future may be blessed with peace and prosperity." On the invitation of the President, the members then rose and sang the National Anthem.

The Unitarian Church authorities of Great Hucklow have decided to establish a convalescent home for ex-soldiers and sailors and others at a cost of £10,000. The building is to be erected at Great Hucklow, in the Peak district.

When the air raids began the authorities of Westminster Abbey took precautions to preserve most of the more valuable monuments in the Abbey, and the Coronation Chair and many of the effigies were removed to the crypt, other monuments being protected by sandbags. These are being taken back, or uncovered, and the Coronation Chair now occupies its ancient position facing the tomb of Edward the Confessor.

Our Office Table.

The restoration of roads to their pre-war condition, and the relation of such work to the problem of demobilisation, were discussed at a meeting of the County Councils Association at the Surveyors' Institution, Westminster, last Wednesday, the following resolutions being adopted:—That it is desirable, in the interests of the roads of the country, that all technical road officials and assistants should be demobilised at the earliest possible moment in order that their services may be utilised by road authorities in the preparation of schemes for road works, which will then be ready to be proceeded with on the general demobilisation of labour; that County Councils should have the same priority in regard to labour as proposed for borough and district councils and for contractors; that it is most desirable that all existing embargoes on road management, materials, and transport should be totally removed, and all the rights, powers, and duties of road authorities completely restored at the earliest possible moment; that the present system of control of materials and transport should be continued only until such embargoes can be removed.

Princess Christian presided at the annual Christmas sale of gifts at the Royal School of Art Needlework, Exhibition Road, which was opened last Wednesday. The sale included some specimens of Waterford glass (from the Stannus collection), a pair of 1765 candelabra, 3 ft. 6 in., an old chalice of which only three are known to be in existence, an old pot-metal bowl (1760) of great rarity, which shows the lead deposit breaking through the glass, an Irish flint glass bowl and basin (1770) weighing 32lb., and some hundreds of pieces in all. The Ming panels looted during the Boxer risings, the Petit Point and Gros Point chair covers, which at the moment are in so much demand, attracted attention, as did the antique English, French, Italian, and Oriental embroideries and lace, a set of five panels of English tapestry (1700) and a large panel of Flemish tapestry. The furniture included a William and Mary walnut chest of drawers on ball feet, a Queen Anne walnut secretaire, a painted Venetian writing table, a lacquer table, a specimen Jacobean chest, a Tudor refectory table, and an old Dutch dresser of polished oak.

Mr. W. F. Andrews, thrice Mayor of Hertford, who has just died, aged seventy-seven years, was known as an archæologist. He was a large owner of property in Hertfordshire, and with his brother presented a museum to the county town.

The Weymouth T.C. has approved plans, submitted by Mr. T. B. Whinney, architect, 8, Old Jewry, London, E.C., for rebuilding premises at the corner of St. Mary Street and Bond Street for the London Joint City and Midland Bank.

The famous Quentin de La Tour pastels, which the Germans had carried away from St. Quentin, have been recovered at Maubeuge. They are intact, and, according to a *Times* correspondent, will probably be exhibited in Paris before they are returned to St. Quentin.

At a large meeting in Tranent last week it was agreed to form a committee to work conjointly with the Town Council, with the object of raising at least £1,000 to give the men of the district a welcome home, and of erecting a Young Men's Institute as a memorial to the fallen.

The Metropolitan District Railway Company celebrates its jubilee this year. On October 1, 1868, the line between the end of the Metropolitan Railway at High Street, Kensington, and Gloucester Road was opened, and on December 24, 1868, the section between Gloucester Road and Westminster.

Messrs. Kaye-Parry and Ross, architects and civil engineers, of 48, Kildare Street, Dublin, have received from the Marquis of Aberdeen and Temair a silver medal as a souvenir of the Dublin "Town-Planning Competition." The medal bears the following inscription:—"Presented by the Marquis of Aberdeen and Temair, K.T., to Messrs. Kaye-Parry and Ross, in commemoration of honourable mention of their designs for 'New Dublin' Civic Exhibition, 1914."

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CHIPS.

The Stretford U.D.C. has passed plans for office extensions, Ashburton Road, for the British Reinforced Concrete and Engineering Co., Limited.

At a public meeting at Moot Hall, Longtown, Cumberland, it was decided that the proposed war memorial should take the form of a public hall.

The Fletton U.D.C. has decided to make representations to the C.C. with a view to its joining in a scheme for the erection of a combined town hall and police station.

The question of the provision of a cottage hospital as a war memorial for Gosport has been referred to the Incorporation Committee of the Gosport and Alverstoke U.D.C.

The French Académie des Beaux Arts has decided upon the creation in London of an institution for accommodation of artists desirous of studying the museums and private collections which are so numerous in England. Baron Edmond Rothschild has placed at the disposal of the Academy for this purpose the sum of 300,000 francs.

According to the *Kölnische Volkszeitung*, a patent has been granted for a new process for treating ordinary chalk, whereby a valuable and cheap substitute for cement is obtained at a small cost. The material sets in water, and resists the action of water like cement. Though somewhat inferior to cement in strength, it is very suitable, so it is said, for use in house-building.

It is admitted that since the adoption of blast-furnace slag and other substances for cement we have not a full knowledge of the chemical reactions which take place within that compound. To remove this somewhat dangerous ignorance a Research Committee of the German Cement-makers' Union has been recently formed to carry out the necessary systematic investigations.

Mr. Charles John Kohler, of Huish, Littlecommon, Bexhill, retired architect and surveyor, who died on June 27, leaving property of the gross value of £10,165, with net personalty £8,320, has bequeathed, subject to the life interest of his wife, £1,000 each to the National Society for the Prevention of Cruelty to Children, the Waifs and Strays Society, Miss Agnes Weston's Sailors' Homes, and Dr. Barnardo's Homes; £500 to Hastings Hospital, and £250 to the Cripples Homes.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

BOSTON (LINCS.).—For erection of a new bridge over Maryland Drain, Amber Hill, for the Boston Rural District Council:—

Pinder, J. W. (accepted)	£650 0 0

DERBY.—For boiler foundations, brickwork, etc., at the electricity station, for the Corporation:—

Morley, E., and Sons .. .. (Accepted.)	£643 0 0

HAMMERSMITH.—For steelwork in connection with new coaling stage and outside roof, for the Hammersmith Borough Council:—

Foster Construction Co., Ltd., 127, Corporation Street, Stratford, E.	£365 10 0
Rowell, D., and Co., Ltd., 14, Howick Place, Westminster, S.W.	247 10 0
Young, H., and Co., Ltd., 486, Wandsworth Road, Vauxhall Cross, S.W.	221 0 0
Aston Construction Co., Ltd., Eagle Wharf Road, N.* ..	200 0 0
Redpath, Brown and Co., Ltd., 3, Laurence Pountney Hill, E.C.	180 0 0
Measures Bros., Ltd., 105, Southwark Street, S.E.	177 16 0

*Recommended for acceptance.

LIST OF TENDERS OPEN.

BUILDINGS.

Dec. 31.—Completion of 14 houses (exclusive of street works) at Gellifaelog, Penydarren, and Merthyr Tydfil.—For the Corporation.—Particulars from the borough architect, Town Hall, Merthyr Tydfil. Tenders, endorsed "Gellifaeleg Houses," to T. A. Rees, Town Clerk.

ENGINEERING.

Dec. 10.—Supplying and fixing two 10-in. centrifugal pumps and motors, with necessary suction and delivery pipes.—For the Southampton Corporation.—Particulars from the borough engineer, J. A. Crowther, Market Chambers, Southampton. Tenders to the Town Clerk's office.

LIGHTING.

No Date.—The Corporation of Bootle invite schemes and tenders for the supply and erection of a complete street lighting equipment, by means of half-watt lamps, for four miles of tram routes throughout the borough. Particulars from T. D. Clothier, Borough Electrical Engineer, Electricity Works, Bootle.

PAINTING.

Dec. 5.—Inside painting, etc., at Barnes, Colliery, and Diamond Hall Schools, Sunderland.—For the Corporation.—Town Clerk's Office, Town Hall.

SANITARY.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

The Rochdale Corporation Health and Housing Committees are co-operating to prepare a housing plan at an early date. More than twelve months ago the Council authorised them to formulate a scheme for the erection of 250 dwellings as the first instalment of a municipal scheme which was ultimately to provide 750 houses. The trouble, as elsewhere, has been to try and induce a larger Government subsidy.

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THE BUILDING NEWS

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Currente Calamo.

We trust the "Slackers" are not going to win next Saturday, but are by no means sure, if they are let. Every soft-jobber believes that five years more of snug controllerships and censorships are to bring more "refreshing fruit" to the still hungry shoals of place and pelf-hunters whose "patriotism" is centred round self, and who will Prussianise our lost free institutions into an oligarchy as oppressive as it will prove unbearable. If they win the next Parliament will not last very long. How long depends on the votes next Saturday of honest men of all opinions. If they refuse to vote for candidates who will not pledge themselves to demand in the new House of Commons the complete abolition of "D.O.R.A." and all her brood; to get on with Housing, instead of drivelling about it; to break the fiscal and footling fetters that have strangled our own industries these nine years past; to encourage enterprise instead of palsying it by sham Socialism; and to pay out honestly out of the huge tax levied by the Government on the losers by air raids, they may make up their minds presently to endure an epoch of exploitation of the fruits of all honest work, which can only end in national bankruptcy, and to the connived-at escape from just punishment of the chief scoundrels who organised the vile conspiracy against the Empire, and whose backers will be allowed once more to flood the country with the vermin that preyed on our industries and are already creeping back here, doubtless assured of the toleration and encouragement of their friends in high places.

Having failed in their appeals to the Government, the Committee on War Damage, on behalf of 842 municipal authorities, now put the matter before the electors in the full belief that they will only vote for such candidates as pledge themselves to support the following resolution to be proposed immediately on the assembling of the new House of Commons, viz.:—

"That in the opinion of this house the Government Air Craft and Bombardment Insurance Scheme has operated unfairly: That it makes individual citizens responsible for losses from war damage which they had no power either to avoid or control: and That a Measure should be passed into law providing for compensation out of National funds in all cases of injury, whether to persons or estate, from air raids or bombardments since the commencement of the War, where compensation has not already been given."

All who are called upon to vote in the election of the new House of Commons, on Saturday next, will have many momentous questions to consider, but few more serious than the question of Government responsibility in connection with war damage inflicted on civilians. This appeal to the electors is made in the full belief that the plain statement of the case to be had from 7, Pall Mall, S.W.1, will ensure the return of only such candidates as will support the principle of national responsibility in this matter. We heartily endorse it.

We regret our limited space hinders us from giving the temperate and pertinent paper read at the Surveyors' Institution on Monday evening last on the recommendations contained in the First Report of the Acquisition of Land Sub-Committee of the Ministry of Reconstruction. We confess that the recommendations seem to us in many respects vague and perplexing. The Committee propose that the Orders of the sanctioning authority should not be open to review by courts of law. That, no doubt, would be so as regards the grant of compulsory powers for the taking of land, but in other directions Mr. Wallis's questions surely need replies. Would the sanctioning authority have the power and authority of Parliament? Would every clause of their Order have statutory validity? Would the authority have power to repeal or amend clauses in private Acts of Parliament? Could they grant statutory powers to railway companies and corporations? And would the courts decide that "the sanctioning authority is supreme in power—it can make that which would otherwise be illegal, legal by its declaration of validity"? How far Parliament should delegate other legislative powers to a new authority is a matter for Parliament, but if such other powers are delegated it would not seem right or convenient that a different procedure should apply merely because certain aspects of local legislation include compulsory acquisition of land. If so much is delegated may not all private Bill legislation go presently to the new authority? And in that event the proposal of Mr. Leslie Scott's Committee that a new panel of commissioners should grant all kinds of general statutory powers when associated with land surely raises complicated problems for our consideration.

We are very glad the Royal Academy is following up its action in March and July last with regard to War Memorials. With the approach of peace the necessity of organisation in dealing with such is already painfully evident. The desire to perpetuate the memory of those who have laid down their lives is wasting itself in wrong channels through lack of competent guidance, and endangering our national buildings and spaces by ill-advised interference. It is essential that memorials within our churches and cathedrals, in the close, the public park, or the village green, should not clash with the spirit of the past; that, however simple, they should express the emotion of the present and hope of the future without losing touch with the past, and that, instead of being a rock of offence to future generations, they should be objects of veneration to those who follow us. Recognising this, in July last a representative meeting was held at the Royal Academy, at which, in addition to members of the Royal Academy, the following gentlemen were present:—Lord Plymouth, Lord Crawford, Lord Ferrers, Lord Desborough, Sir Alfred Mond, Sir Lionel Earle, Lieut.-Col. Sir A. Leetham (representing the War Office), Major-General Fabian Ware, Lieut.-Col. Sir F. Kenyon (representing the Imperial War Graves Commission), the Dean of York, the Dean of Wells, Mr. R. C. Norman (chairman of the L.C.C.), Mr. Athelstan Riley, Mr. H. T. Hare, P.R.I.B.A., and others; and out of a General Committee then formed an Executive Committee has been nominated, with Sir Edward J. Poynter, Bt., P.R.A., as chairman, including the Earl of Plymouth, the Earl of Crawford and Balcarres, Earl Ferrers, Mr. Reginald Blomfield, R.A., Sir Thomas Brock, R.A., Sir George Frampton, R.A., Mr. H. T. Hare, P.R.I.B.A., Sir Aston Webb, R.A., and others. It is felt that in all cases the designs of memorials should be entrusted to competent artists, and this committee has been formed not to undertake designs, but to give assistance and advice at an early stage to the promoters of memorials, to act as a body of reference for those who desire guidance as to the general scope and character of memorials. Dio-

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gesan Committees are being appointed, and in some cases are already at work, which will, among other duties, assist the clergy in securing the highest standard of memorials in churches and cathedrals. An organisation of similar character has been set on foot in Scotland, and it is hoped to co-operate with these and other committees in all the great provincial centres and to have the sympathy and help of public authorities and of the clergy and laity throughout the country towards the attainment of the object in view. Communications should be addressed to the Secretary, Royal Academy, Piccadilly, London, W.1. We heartily endorse the action taken, and trust the responses will be numerous.

The Fine Arts Commission to which the question was referred by the American Government has given its verdict in favour of the St. Gaudens statue of Lincoln, which we suppose will be put up on a site given by the British Government in Parliament Square to commemorate the century of peace between the two countries. A replica of the statue by St. Gaudens, which stands in Chicago, was originally chosen as the gift to Great Britain, but afterwards Mr. Charles Taft, the brother of the ex-President, offered to present a copy of the much more recent and, as many think, much more powerful statue of Lincoln by Mr. George Barnard at Cincinnati. As readers will remember, there was a long and excited controversy as to the comparative merits of the two statues, in which the Barnard statue was loudly denounced. Barnard, who was a pupil of Rodin, shows Lincoln with his hands clasped in front of the body, and the statue was libelled as that of "the man with the stomach-ache." Now that the St. Gaudens statue is coming to London, it is suggested that some other site must be found here for the Barnard Lincoln, and that now is the time for one of the great cities of the provinces to put in a claim.

The seventh edition of the excellent "Handbook" (the first was issued in 1908) of the British Reinforced Concrete Engineering Co., Ltd., 1, Dickinson Street, Manchester, is a fine record of continuous progress, and throughout its 172 pages a real encyclopædia of information about reinforced concrete and its applications. That the company's experience has been turned to good account is evident. It was formed in 1908 and the first edition of its handbook was issued to introduce the "Paragon" system of reinforced concrete construction. The demand for the company's specialities was soon so far in excess of anticipation as to necessitate an early reorganisation on broader lines, and this was carried into effect in 1911. At the same time, having felt the need of a slab reinforcement with rigidly connected members in place of loose rods and bars, the company established works for the manufacture of B.R.C. electrically cross-welded steel wire fabric, and has since found it necessary to enlarge its factory three times. Its further experience and research have enabled the company from time to time to improve its patents, the most important and most recent improvement being the introduction of a "grouped" stirrup to take the place of the older form of single stirrups. All the company's specialities are now embodied and known under the name of B.R.C. reinforcements, the universal application of which is lucidly set out in the "Handbook," which every architect and builder should keep handy on his desk throughout the year.

"THOMAS SETTLES DOWN."

Most of our readers must have enjoyed "Thomas," whose earlier history Mr. H. B. Cresswell, F.R.I.B.A., gave us last year, and which is still selling merrily. Our returning readers who may have missed our review of it in our issue of October 31, 1917, should get a copy at once, and with it "Thomas Settles Down," just issued by the same publishers, Messrs. Nisbet and Co., Ltd., 22, Berners Street, W.1, not merely to pick up the threads, but to continue the story satisfactorily. We ventured last year to express the hope that Thomas, then just launched into the joys of married life, might turn over a new leaf and tell us what followed.

The main interest still centres round house-building; and this time Mr. Cresswell, who made us laugh last year at the experiences of poor Lady Jane Waterbury, who ordered her house at "The Stores," and had the wrong one sent her, is sarcastically humorous this time at the expense of Benson Friba, a regular up-to-date "Pseudo-Neo-Grec" architect, who is commissioned by Thomas to design him a house "with lots of cupboards, drawing-room, hot-water coil to dry the children's boots, large Den for me, gauze to keep the flies out of the larder, schoolroom, kitchen of course, Brodie's self-cleaning lavatory basins (they have them at the club) . . . one of those arrangements so that you can alter the size of the kitchen fire . . . and a verandah, and lots of cupboards, etc., for five thousand pounds."

Friba notes all this down, and says impressively, looking down at Thomas with frowning concentration: "I want you, Mr. Quinn, to tell me what sort of house you would lake; what stale of house have you in maned?"

"A thoroughly good style," I tell him. It appears, however, that I have misunderstood Friba. He means "what stale of Architecture."

"A *pretty* house," I tell him.

"Oh, quate," says Friba. He does not, however, seem satisfied, for he frowns at his boots for a moment. Then he asks:

"What building do you particularly admare?"

"Westminster Abbey," I tell him with decision.

"*I* see," says Friba. And he steps down, examines a paper on his table, tears it up, puts it into the waste-paper basket, remounts the fender and looks at me.

"The sort of house you ought to have," he says impressively, "is a Pseudo-Neo-Grec house."

"Ought I?"

"Yes."

"Oh! All right. But why?"

"You'd lake it."

"Should I?"

"Yes."

"Are you quite sure?"

"Quate."

"Well, you'll see that the drains don't smell, won't you?" I said. "I forgot to mention that. You see——"

But Friba has left his perch on the fender and gone to the counter that runs along in front of the windows.

"This is Pseudo-Neo," he says tolerantly, as he shuffles some sheets of paper before him. "For Lord Glaives," he adds as I join him.

What he shows me is, however, a picture of a sort of Temple of Venus.

"But it's too small," I tell him; "and I want a proper house to live in. This one has not even got any chimneys."

"Oh, quate," says Friba. "This is only to show you the stale. Do you know him? An awfully nace man." Friba points to the startling title printed along the top of the sheet. "Proposed Garden Pavilion for the Rt. Hon. Vicount Glaives, M.V.O."

"Well," I say, resuming my chair, while my harshtect returns to his perch on the fender. "There are just one or two matters I want to tell you about. First as to the verandah. I want a good wide one so that——"

"I am afreed a verandah is quate out of the question," Friba breaks in.

"Not have any verandah?"

Friba shakes his head, frowning judicially.

"Why not?" I ask.

"You wouldn't lake it, Mr. Quinn."

"Not like it! Why?"

"Pseudo-Neo-Grec!" Friba shrugs.

"I don't follow you."

"A verandah," Friba sighs, "wouldn't be Pseudo-Neo."

"Wouldn't it?"

"No."

Further discussion elicits the assurance that verandahs, bay windows, carved barge-boards, and most other things Thomas wants are quite impossible with "Pseudo-Neo-Grec." However, Benson Friba consents to see the proposed site and make a survey for levels, and with a last appeal for "plenty of cupboards," Thomas leaves for a holiday at Bournecambe with Nita and the children, and, on his return, to endure as well he may the motions and feelings of Quentin Tarbett, a posturing prig, who has fastened himself on to Nita, and, in the end, proves an unmitigated nuisance. Very soon the plans of the new house arrive, and Thomas goes to see his architect.

"I've come to see you about the plans of my house," I say.

"Oh, yes!" says my harshtect, with a sudden show of interest. "Have you them with you?"

I hand him the roll which he deftly opens and spreads out on the table before him.

"Do you lake this conception, Mr. Quinn?" he asks as he glances over the sheets.

I tell him, "No, I do not."

Friba laughs indulgently and climbs back on to his perch.

"Now I want you, Mr. Quinn," he says, with frowning impressiveness, "to tell me exactly what you don't lake—what it is you object to."

I tell him "All right: I will. I don't like the terrace," I say, "I don't like having no bay windows or verandah; I don't like the look of the house; I don't like traversing a rabbit warren to get to the bath; I don't like the children falling into the gooseberry-fool on Sundays; I don't like having to employ ballet-dancers as parlour-maids; I don't like Malay cooks, and I don't like spending twice as much money as I have got. Perhaps that's enough to go on with."

My harshtect laughs uneasily and brushes his sleeve with his hand as though he noticed dust on it. He begins to swing backwards and forwards bumping his shoulders gently against the mantelpiece as he asks, looking up at the ceiling:

"Well, Mr. Quinn, you say you don't lake the terrace. Now, I want you to explain exactly way you don't lake it."

"I don't like the obelisks," I tell him.

"Ah! you mean the *pyramids*," says Friba in a tone of glad enlightenment mingled with reproof.

"All right, call them pyramids, by all means," I say. "What are they for?"

"*What are they for, Mr. Quinn?*"

"Yes."

"Way! to give *expression!*" says my harshtect waving one hand comprehensively. "I'm very fond of pyramids, Mr. Quinn."

"Well, I'm afraid I'm not," I tell him. "They remind me of Fee-Fo-Fum's skittle-alley at the pantomime. I should want to throw them over. They must cost a lot of money, too."

"Oh, say five or six pounds apiece, not more," Friba assures me.

"Or nine hundred pounds a gross," I put in. "I'm not a buyer."

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"But you must have *expression!*" cries my harshtect, with a note of consternation in his voice.

"Why?"

"Pseudo-Neo-Grec!" exclaims Friba, throwing out his hands. "The pyramids are all part of my conception, Mr. Quinn," he expostulates.

"Then you must modify your conception, Mr. Benson."

"I've spent a lot of tame, Mr. Quinn, working out the desaign," he is beginning, but I interrupt him by asking:

"Why have you left out the bay windows and the verandah?"

"Because they are not in the stale. You must remember, Mr. Quinn," he goes on impressively, "that I have my reputation as an Architect to consider, and that may career depends upon the expressiveness and scholarship of may conceptions."

"But I have not got your reputation to trouble about, and I want bay windows and verandah."

"Mr. Quinn, I have tried to explain that it wouldn't be Pseudo-Neo-G——"

"Damn Pseudo-Neo-Grec!"

"They would be utterly inconsistent with may conceptions," says Friba hotly.

"Damn your conceptions," I tell him.

In the end matters get into the hands of the lawyers, and Benson Friba sends in a bill for £133 16s. 9d., ultimately consenting to accept twenty guineas in full settlement and to hand over the survey and plan of the site, etc. Thomas picks up another architect outside a railway station, also a F.R.I.B.A., one Torino Large, who turns out quite a decent fellow, with no nonsense about "Pseudo-Neo-Grec," who ultimately builds his client a really delightful house with a "sun-trap" to it—its architect's own suggestion, in which Thomas and his wife and family settle down—but not till after further happenings—some of them laughable enough, but others which narrowly missed being tragic enough.

One Nibby Farquhar, an old acquaintance of Thomas nine years before, but Mrs. Grogan, "a poor little deserted widow now, but still Nibby to the favoured few," falls across him, and ultimately succeeds, in chapter fifteen, in sending Thomas home, thoroughly ashamed of himself—as he ought to be—and very ready to resent his wife's recital of the insulting behaviour of Quentin Tarbett to her, to an extent which has opened her eyes to the real character of the cad. Tarbett calls soon after, and Thomas "blots him out." A summons follows. Thomas conducts his own defence, and the summons is dismissed, amid the congratulations of all friends in Court. A last interview at the "Casino" with Nibby, whom he finds in a box there with an old buck whom she has ensnared into an offer of marriage, effectually ends any more nonsense in that quarter, and a final chapter—all too short—tells the story of the part played by Thomas and some of his friends in the great struggle that has just ended. Home with a splintered rib and a damaged inside, his architect, Torino Large, goes to see him in the convalescent home. Torino Large has come back with an empty sleeve. He has been magnanimously rewarded by the Government, of course!

"As a capable architect he has not been discharged, but has been promoted by the War Office to be a full temporary lieutenant in the Royal Engineers, and appointed to lay out housing schemes for the Ministry of Munitions, for which purpose he has been lent to the Office of Works, so that Large is rather puzzled to find himself housed at the Admiralty. He has, on his staff, civilians drawing up to six hundred a year and receives, I believe, in recognition of his services to his country, twelve and eightpence a day, plus two and fivepence a month 'candle money.' The allowance is in lieu of tallow dips, and is paid because it has been the habit of the War Office to pay it ever since tallow dips came into use. Large tells me that though he has to apply to an Admiral if he wants a day off, he is, by the regulations, called upon to wear spurs when presiding in his drawing-office."

And the war, which has driven the devil out of so many of us, even enabled Quentin Tarbett to redeem his folly. He, too, joined up, though over forty, and was killed, and Thomas forgets the old grudge:—

"So, Tarbett, you also will I honour while I live:—a man beguiled in a good land rotted with prigs, but still a man tested and proved as his country has been tested and proved. Out of the slime, the beslaverment of unreality; self-seeking; shams; and make-believe; arises—England. From behind the bank counter; from the pawnbroker's office and the fishmonger's back parlour, as from the farm and the factory, the ranche, the dockyard, the fo'c'sle, and the mine; the race emerges true to type: the Empire knows itself. All's well.

Our Illustrations.

TOUR DE LA GROSSE-CLOCHE, BORDEAUX.

The site of the "Tour de la Grosse-Cloche" was originally occupied by the Porte de l'Hôtel de Ville, built by Henry III. of England hard by the Church of St. Eloi, famous as the shrine of the Tomb of Eleanor, heiress of Guillaume X., last Compte de Poiton, who transferred Bordeaux to Henry III. in 1152. This bell tower, with its conical roofed turrets, needs little description. The thorough renovation of the fabric included its very complete repair, after the typical methods adopted by the French.

OPEN-AIR SCHOOLS, DAISY HILL, BRADFORD

These schools comprise three main groups of buildings arranged one behind the other on a hill sloping from north to south, the site being admirably suited for the purpose of such a series of premises. This land at Daisy Hill, Duckworth Lane, comprises seven acres approximately, and was purchased for this large educational undertaking. The apex of the site is devoted to the residential pupils' buildings, and the northern half of the property is allocated to the open-air school, while the southern half is to be occupied by the school for mentally deficient children. We give the plans and elevations to-day of both the main establishments, reserving our illustrations of the residential school for an early occasion. The various blocks of buildings are planned on an axial line running north and south. On the extreme south of the open-air school will be placed the buildings to be used for teaching purposes, consisting of a central hall, flanked east and west by three classrooms, each of which will be completely detached, and laid out diagonally one above the other, on the slope of the site. This arrangement, which will be more clearly seen by reference to the plans, secures a free passage of light and air to each, and further allows the floor levels to be fixed at varying heights above the datum to meet the site levels falling towards the south. On the north of the foregoing are placed the cloakrooms and offices for the boys and girls, while further to the rear is provided a baths block, consisting of douche and slipper baths, with dressing accommodation, and a heating chamber in the basement. Two separate blocks to the rear are provided, one for the teaching of woodwork and other crafts for the boys, and the other for laundry and cookery for the girls. Resting sheds for boys and girls adjoin the above blocks, and these will also be available for open air teaching in case of emergency. The accommodation provided will be for twenty scholars each in the classrooms, and in addition the handicrafts and house-crafts blocks will provide for twenty scholars each. Behind the manual buildings and higher up to the north of the site is placed the premises for the use of residential children, as already mentioned. The external walls throughout will be 14 ins. thick up to the cill line, faced with selected inside wall stones, and above that level will be in 9 ins. brickwork, finished with rough cast. The internal walls will have wood dados, and above these the facing will be finished in plaster. The floors will be laid in maple boarding secured to coke breeze concrete, with the exception of the kitchen, scullery, pantry, and entrances, which will be finished in red quarry tiling. The roofs throughout will be covered with Westmorland slating, with overhanging eaves and cast-iron gutters. The external treatment generally has been kept as simple as possible, the grouping of the blocks being relied upon chiefly to give a pleasing external effect. The site is surrounded by a belt of trees, and the grounds about the building will be laid-out and planted. The open-air school for the mentally defective, shown by our two other sheets of working plans and elevations, sets back considerably from the frontage line in Duckworth Lane, the carriage entrance being about 150 ft. higher up in Daisy Hill Lane. The buildings are laid out on the same axial line bisecting the site from north to south, and follow generally the scheme adopted for the above described school. Any differences of detail are clearly shown by our illustrations. The area available is so spacious that after providing for the school buildings ample room remains for excellent playing fields. Each block of buildings has a south aspect, and the whole are symmetrically arranged. In the centre is the dining-hall for 160 scholars, in addition to the teaching staff, and adjoining this on the east and west are the assembly rooms for boys and girls respectively, which will have entrances from the dining-hall in addition to entrances on the fronts. On each side, but completely detached, are three classrooms, each one being a separate building, and standing forward from one another on plan to insure the free circulation of light and air. These class rooms have walls on the north side only, the other three sides being fitted with collapsible glazed shutters, which will allow of the side to be closed against the wind, whichever way it may be blowing. A kitchen and scullery occupies a position of the north side of the dining-hall, and the basement is used for the heating chamber, with coal place, this position being central for the distribution of heating-pipes. Cloakrooms for boys and girls, lavatories and teachers' rooms are provided for in separate blocks on the north side of the corridor, east and west of the central block. Douche baths, together with slipper baths and dressing-rooms, occupy a separate building to the rear of the dining-room kitchen. The teaching of shoemaking, ironwork, woodwork, and tailoring will be carried on, and separate rooms have been allocated to these in buildings on the north-west of the site. In the corresponding position in the north-east will be the block for the teaching of sewing, cookery, and laundry. The pupils attending this school will all be day scholars, and the provision made is for 120 children, boys and girls, with an additional forty scholars in the manual and housewifery blocks. The architect is Mr. W. Williamson, Licentiate R.I.B.A., the City Architect.

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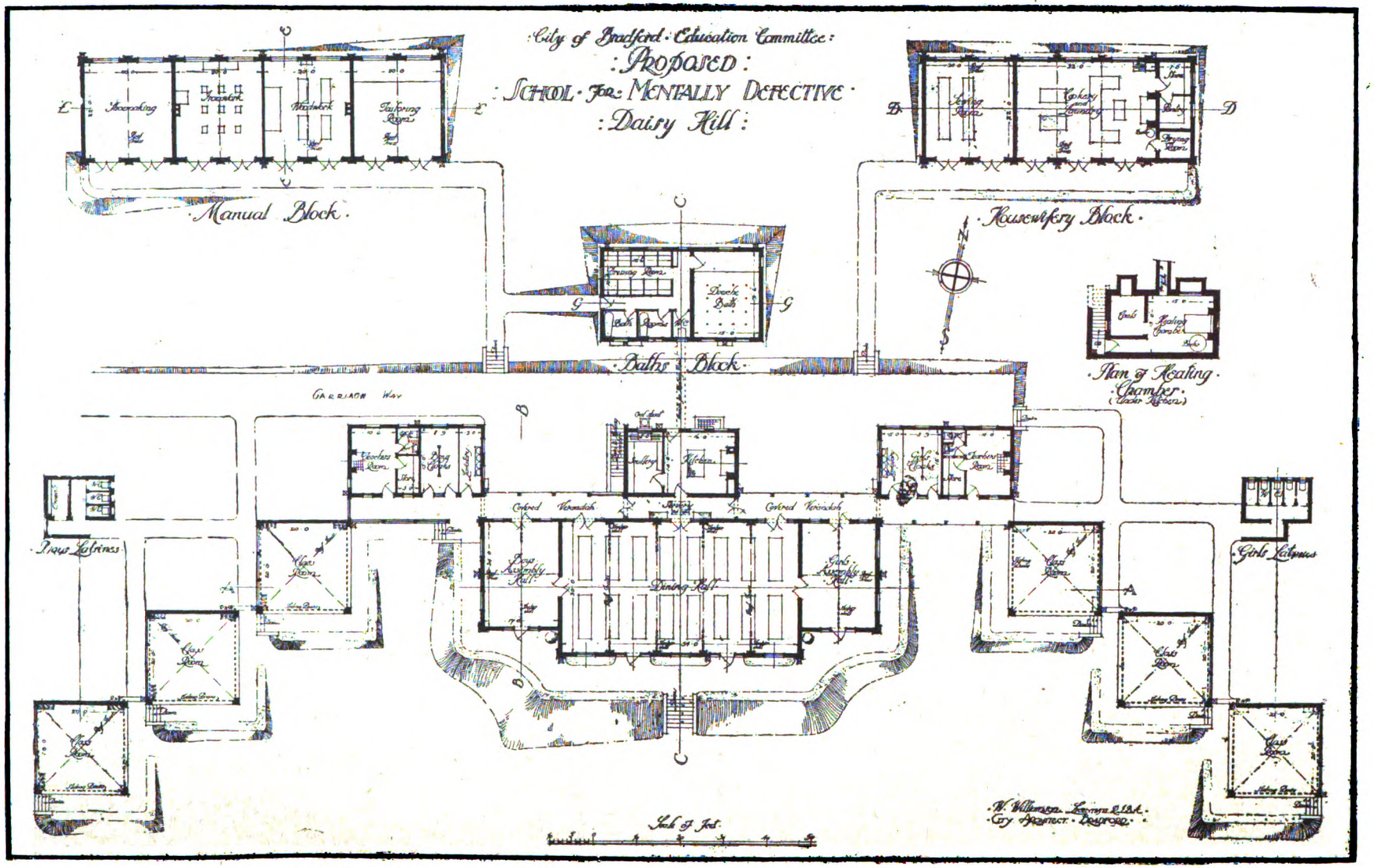

SCHOOL FOR THE MENTALLY DEFECTIVE, DAISY HILL, BRADFORD.

Mr. WILLIAMSON, Licentiate R.I.B.A., Architect.

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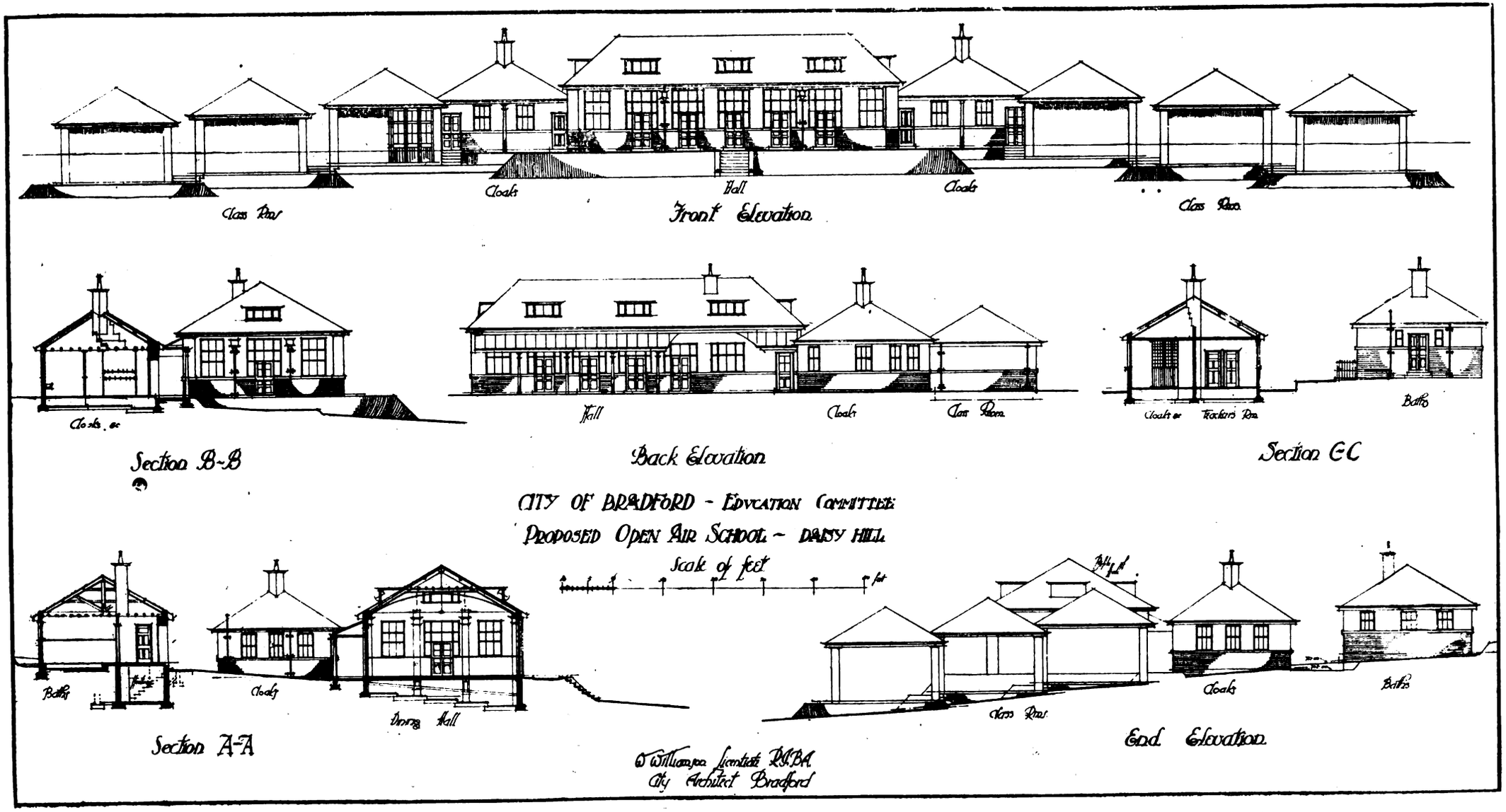

OPEN-AIR SCHOOL, DAISY HILL, BRADFORD.

Mr. W. Williamson, Licentiate R.I.B.A., City Architect.

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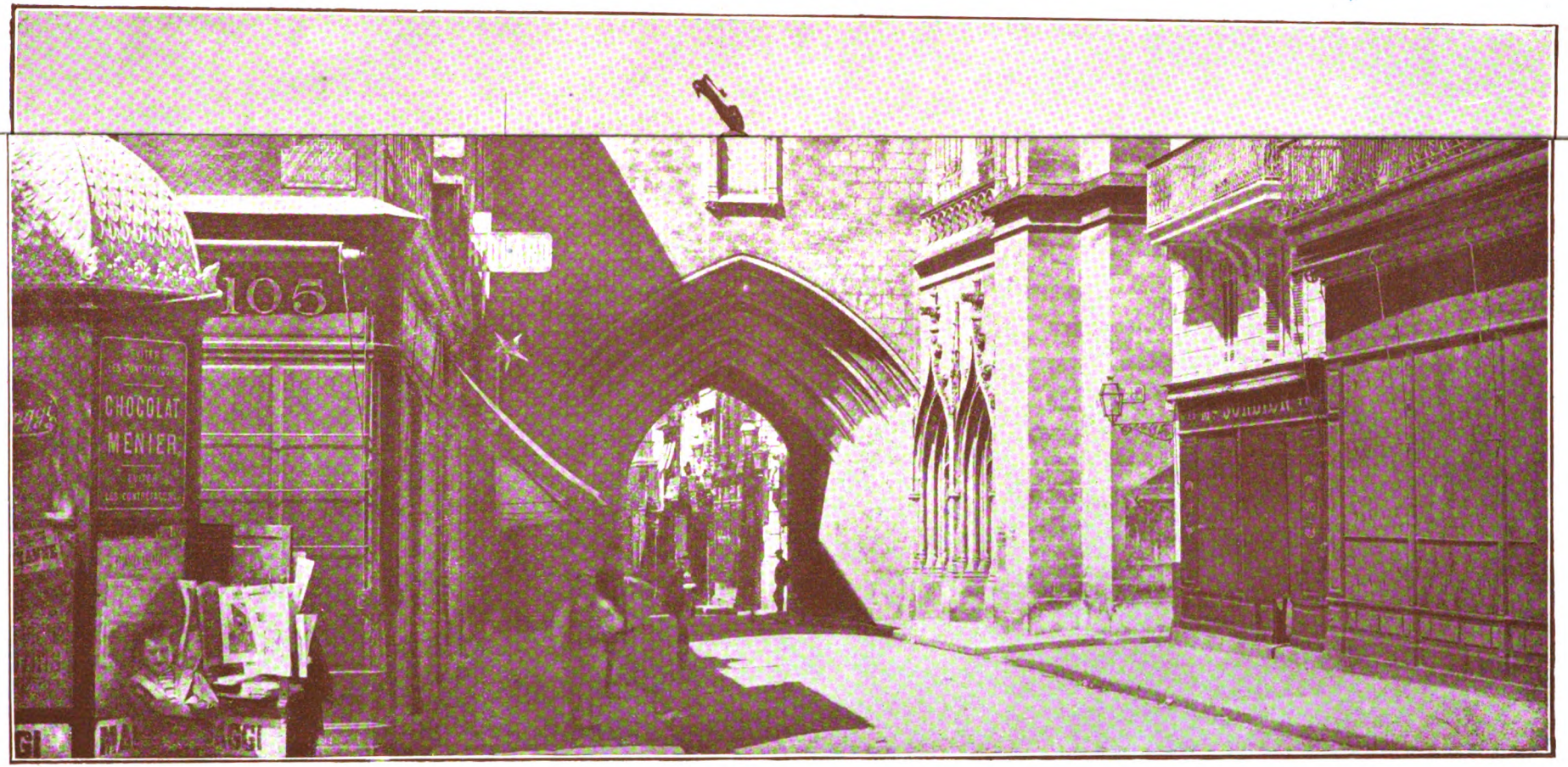

TOUR DE LA GROSSE-CLOCHE, BORDEAUX, FRANCE.

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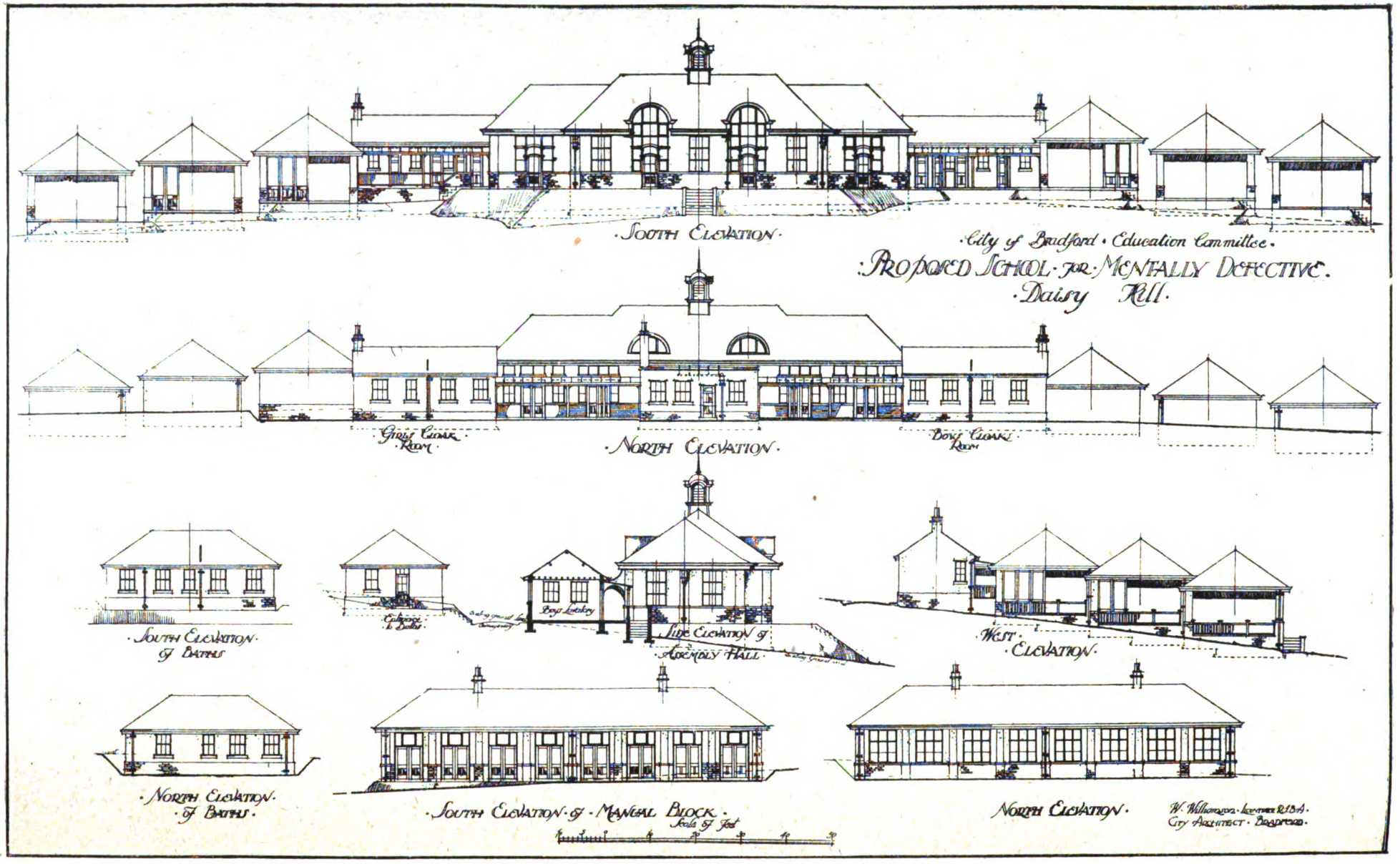

SCHOOL FOR THE MENTALLY DEFECTIVE, DAISY HILL, BRADFORD.

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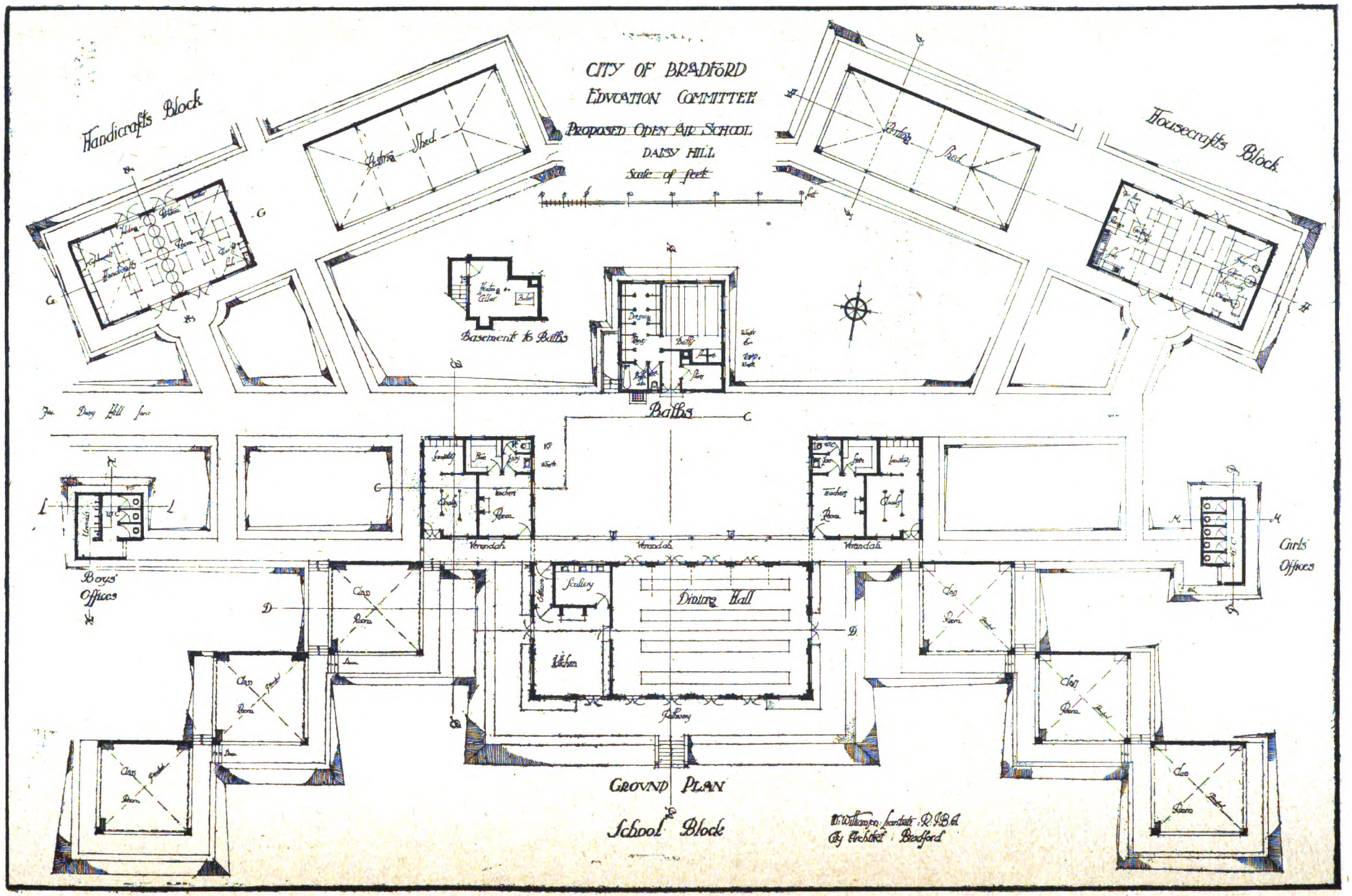

OPEN-AIR SCHOOL, DAISY HILL, BRADFORD.—THE SCHOOL BLOCK.

Mr. W. WILLIAMSON, Licentiate R.I.B.A., City Architect.

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THE SURVEYORS' INSTITUTION.

(*Continued from page 381.*)

The third of the three objects mentioned by Mr. Horatio Lloyd was (c) Moral Improvement, which he considered would be attained by fostering the best spirit of professional conduct.

My remarks as to the manner in which (a) and (b) have been carried out apply largely to (c) also, as successful efforts to raise the educational and social standards of a profession must necessarily exercise a beneficial influence upon the professional conduct of its members. But, apart from this, the influence of the Council through the Professional Practice Committee has been in the direction of inculcating a high ideal of professional honour and conduct among members; and although in individual cases lapses from this model may occasionally be brought to the notice of the Council, an expression of disapprobation on their part usually suffices to prevent a recurrence of the conduct in respect of which complaint was made, and the tendency generally has been definitely upwards.

Thus far I have been referring only to the relations between persons carrying on the same profession, and the unwritten rules which govern their conduct one towards another and which debar the one from attempting in any way to attract the clients of another or to deprive him of emoluments arising from work on which he might naturally expect to be employed.

While the etiquette which must necessarily exist with regard to these matters if the differentiation between a trade and a profession is to be maintained is important, still more important is it that the relationship between the surveyor and the public or his clients should be governed by the highest considerations of probity and honour. As long ago as 1868 John Clutton, in his opening address at the first ordinary general meeting of the Institution, referred to the danger of surveyors, unconsciously perhaps, becoming partisans or advocates of the interest by which their services have been engaged, and of their being, perhaps unconsciously, led astray by their zeal or imagination under the guise of giving opinions. Mr. Clutton pointed out that the business of a surveyor was to give an unbiassed opinion upon the subject placed before him, and not to become in any sense an advocate. He instanced a well-known surveyor of the time who, on being asked if he were not "concerned" for some one, replied, "I am employed by him, but not 'concerned' for him."

It must not be supposed that in giving this warning Mr. Clutton meant to suggest that a surveyor should not look after and provide for every legitimate interest of his client, but that in doing so he should weigh the whole circumstances in a judicial manner and give his advice in a fair and unbiassed way. It must not be forgotten, too, that his words were spoken fifty years ago, and I have no hesitation in saying that the danger to which he referred has been considerably lessened by the higher standard of professional training which now obtains, and of which I have just been speaking. At the same time the warning is one which we should still do well to bear in mind, the need for judgment and restraint becoming increasingly imperative in view of the legislation which has recently been, and seems likely in the near future to be, enacted in connection with the acquisition of land for public purposes and other matters connected with landed interests.

That is the position which has been consistently supported by the Council, and I believe that those who can speak with greatest authority through the length of their membership will corroborate my view that in this, too, the improvement since the Institution has been in a position to exert its influence is very noticeable.

(To be continued.)

Mr. A. B. Brown, F.S.I., of Lennox House, Norfolk Street, Strand, has been appointed diocesan surveyor for the Oxford Diocese (Archdeaconry of Buckingham).

Correspondence.

EMPIRE WAR MEMORIAL.

To the Editor of THE BUILDING NEWS.

Sir,—An unusual feature of the most recent proposal for a War Memorial on a large scale was that there was associated with it an Advisory Committee composed of leading representatives of almost every profession and calling except that of architecture.

By whom and for what purpose this Advisory Committee was constituted did not appear, and while it may be very advisable that there should be an Advisory Committee to deal with war memorials involving questions of architectural composition and design, it seems to me desirable that any such committee should be constituted by the professional societies connected with architecture, and should consist largely, if not entirely, of architects.—Yours faithfully,

C. MCARTHUR BUTLER, Secretary.

The Society of Architects, 28, Bedford Square, London, W.C., December 3, 1918.

ARCHITECTS' FEES FOR HOUSING SCHEMES, ETC.

Sir,—In the last clause of your report in connection with the above in your issue of the 4th inst. should not the words "TO one-third" read "BY one-third"?

A great deal has been written upon questions relating to housing schemes; much really useful, but I think there are certain aspects of the subject which would be better for further ventilation, and for further expression of honest expert opinion. Amongst those who have been consulted by Government departments are without doubt some of the ablest exponents of the housing problem; but I suspect there is still a certain unwillingness to face facts, at least as far as the immediate future is concerned.

It does not appear to be made sufficiently clear in the scale of charges fixed by the Royal Institute of British Architects whether such charges cover the preparation of bills of quantities or other methods of measurement and valuation. I presume they do not. Authorities about to have schemes prepared should be properly informed on this matter, or they are liable to be misled.

During the last few years of the war the usual method of obtaining tenders has necessarily been more or less in abeyance, and this will probably be the case for a time.

In view of the uncertainty as to ultimate cost by any other method, is it not likely that businesslike authorities will eventually revert to the system of having bills of quantities prepared and proper tenders based upon them obtained?

I am inclined to think that other methods of measurement and valuation which have been suggested will result in the cost of housing schemes becoming so heavy that, after experience, many schemes may be indefinitely pigeon-holed.

Also, is it not conceivable that that part of the balance over pre-war cost payable by ratepayers will, after the signing of peace, for a time be so great that even highly paid artisans could ill afford to pay such rents as would be necessary to cover interest, sinking funds, and repairs, not to mention possible empties?

Yours faithfully,

J. WM. BURROWS, L.R.I.B.A.

Birstall, near Leeds, December 6, 1918.

COMPETITIONS.

THE PRIX DE ROME PRIZE FOR ARCHITECTURE.—Captain H. Ch. Bradshaw, R.E., of Heathfield Road, Wavertree, has been awarded the "Prix de Rome" prize for architecture in connection with the British School at Rome. He was awarded the Lever prize in competition for laying out a park at Walton Hall estate, and was appointed architect for carrying out the scheme. He joined the Army early in the war, was commissioned in August, 1915, served in the Somme battle, at Vimy Ridge and Paschendaele, and afterwards went to Italy, where he was awarded the Croix di Guerra.

PROFESSIONAL AND TRADE SOCIETIES.

ARCHITECTURAL ASSOCIATION OF IRELAND.—At the last meeting at South Frederick Lane an interesting lecture on "Columns" was delivered by Mr. Oswald Reeves. He described the column's development by the ancient Egyptians, and remarked that it was regrettable that an intelligent interpretation of Egyptian Art had yet to be undertaken. Mr. M. J. Burke (president), who was in the chair, announced that to signalise their relief from the nightmare of war the committee had decided to hold a dinner and smoking concert.

INCORPORATED INSTITUTE OF BRITISH DECORATORS.—At Painters' Hall, Little Trinity Lane, on Monday, December 16, 1918, a paper will be read by Mr. Arthur S. Jennings, F.I.B.D. Subject: "The Education of the Painter and Decorator." The chair will be taken at 6.30 p.m. Painters' Hall is near Mansion House Station, Met. District Railway.

SCOTTISH SOCIETY OF ANTIQUARIES.—The Society of Antiquaries of Scotland held their annual general meeting in the Library of the Museum of Antiquities, Queen Street, Edinburgh, last week, when the Right Hon. Lord Carmichael of Skirling was elected President of the Society for a period of five years in place of Lord Abercromby, who retires on the conclusion of his term of office. A number of new Fellows were elected, and it was stated that the total number of Fellows on the roll was 674. The Council in their report made reference to the death of Canon Greenwell, one of the most eminent of British archæologists, who had been since the year 1877 one of their honorary members, and also to the loss which the society had sustained by the death of Mr. Gilbert Goudie and of Mr. Alan Reid, both frequent contributors to their "Proceedings," over a long period of time. To the roll of those Fellows who had given their lives in the war were added the names of Captain Alan Gilmour and Mr. James A. Butti. Attention was drawn to the opportunities of research which would present themselves when normal conditions returned, both in the excavation of Roman and native sites, for which funds were happily available. Reference was made to the loss which the public were sustaining by the galleries of the Museum still remaining closed to them and the collection stored away, and the hope was expressed that at some early date the structural work in the Museum might be completed and a commencement made of the reinstatement of the exhibits. Among the relics added to the Museum in the past year the report mentioned a super-altar with five consecration crosses incised upon it, which had been dredged up in the bay of Wick—a very rare object, there being only two others known in Scotland.

The Morecambe T.C. has decided to obtain competitive designs for a new town hall to be built on the Poulton Hall estate.

Rugby Rural District Council have decided to proceed with a scheme for building 500 houses in their area. Fifty of these will be erected at New Bilton.

The Machynlleth R.D.C. has decided to build six houses in Llanwrin, four in Cemmaes, six in Llanbrynmair and four in Penegoes. Mr. A. M. Howard Jones, Borth, architect to the Merioneth Education Committee, has been appointed architect for the scheme.

Mr. George Roland Halkett, artist and art critic, who has died at 6, Aubrey Road, Campden Hill, W., was born in Edinburgh, in 1855, the son of the late Samuel Halkett, Keeper of the Advocates' Library there. He was art critic of the *Edinburgh Evening News* in 1876. In 1892 he joined the *Pall Mall Gazette* as political cartoonist and writer on art; he also contributed to *Punch*, and was art editor of the *Pall Mall Magazine* from 1900-1905.

West Bromwich Town Council last Wednesday adopted a recommendation of the Housing and Town-Planning Committee that Mr. W. A. Harvey, president of the Birmingham Architectural Association, be appointed to design and carry out the housing schemes, and to collaborate with the borough surveyor in preparing and carrying out a town-planning scheme, and that plans, designs, and estimates be at once prepared for a housing scheme on the Tantany estate purchased by the Council.

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LEGAL INTELLIGENCE.

CLAIM FOR ARCHITECT'S FEES.—GIBSON V. DAVISON AVIATION COMPANY.—In this action, tried before Mr. Justice Roche, in the King's Bench Division, on November 29, the plaintiff, Mr. James Seabright Gibson, architect and surveyor, of 5, Old Bond Street, claimed from the defendant company fees amounting to £1,160 15s. In giving judgment his Lordship said there had been some conflict of evidence as to what took place when the arrangements were made, but he was inclined to accept entirely the evidence of Mr. Gibson. The value of, for want of a better term, what he would call an architect's goodwill, had been undervalued by the defendant's case. As to the first scheme, he thought a percentage basis could not be adopted in making the charges; it would have to be upon the amount of work done, and his opinion was that the proper charge to be made by the plaintiff would be 100 guineas, and that amount he would award. The second scheme was a larger one, which was to fill the vacant ground with new buildings. The defendants said that their instructions were simply to give an estimate of the cost; but that was wrong, as detailed plans and estimates were got out, and he found that the plaintiff did the work at the request of the defendant company, and brought it up to a point when it could be submitted to the Air Board as a detailed scheme that was not quite so much as the plaintiff said would entitle him to charge 2½ per cent. on the estimated value. It was, however, substantially work for which it was submitted 250 guineas would be sufficient payment. He thought the work did fall substantially short of that which would entitle plaintiff to claim 2½ per cent., and that 1½ per cent. would be nearer the mark; but he did not adopt that as an exact figure. Looking at the value of the services, which extended over a month or six weeks, he thought plaintiff ought to be paid £500 for the second scheme. This, with the 100 guineas, would make £605, for which amount he gave judgment, with costs.

OBITUARY.

The death at Norton, Sherborne, of Mr. John Griffiths, aged 81, removes a prominent figure in the work initiated in India in the middle of the last century, of providing at a few great centres schools to maintain, restore, and improve the application of Oriental art to industry and manufacture. He was born of Welsh stock in 1837, and educated at the National Art Training School (now the Royal College of Art), and was associated with the late Mr. Godfrey Sykes on the decorative work of the South Kensington Museum till 1865. The Bombay School of Art, of which he was the first Principal, began with a drawing class in 1857. He contributed materially to the understanding of the paintings in the rock-cut temples of Ajanta, most of the copies of which made by Major Gill, in the course of thirty years' labour, perished by fire at the Crystal Palace in 1866. Thereafter such of the originals as had not been seriously damaged by decay in the meantime were copied by Griffiths. Many were destroyed or damaged by fire at South Kensington in 1885; but the remainder were published in 1896-7, in two large folio volumes, by order of the Secretary of State. His work, "The Paintings in the Buddhist Cave Temples of Ajanta," gives technical descriptions, and he joined Fergusson in comparing the æsthetic merits of the later pictures with the work of Italian artists in the fourteenth century. Mr. Griffiths designed for the Maharaja of Bharnagar a cenotaph in the Indo-Saracenic style in white marble, at a cost of £8,000, and the carved wooden screen in the Bombay Court.

We regret to report the death on November 20, 1918, of Mr. F. W. Bartlett a non-classified assistant in the superintendent architect's department of the London County Council.

It has been decided that the memorial to the memory of Old Berkhamstedians who have fallen in the war and the thank-offering for those who have been spared should take the form of a stained-glass west window in the school chapel, together with a record of the fallen, and a library and museum. It is hoped to raise at least £10,000. Further information can be obtained from the hon. secretaries, C. M. Cox and J. S. Morgan, Lincoln House, Berkhamsted, to whom promises of donations should be sent.

Our Office Table.

The report for 1917 of the Gordon Memorial College at Khartoum gives some details of the archæological work done by Dr. Reisner on the pyramid field at Nuri, which he identifies as a Royal cemetery of the period of the Ethiopian Monarchy. He also gives a list of 22 Kings who ruled in Napata between B.C. 668 and B.C. 300, and has discovered evidence of their sequence. King Nastesen, previously regarded as a contemporary of King Kambyses, is now dated two centuries later. Several objects of value have been found, including alabasters and jewelry from the pyramid of Tirhaka, a wonderful scarab and gold ornaments from the pyramid of Espalta, and a massive silver mirror-stand from that of Nastesen.

Now that the Royal Air Force have comparatively little to do, suggests Mr. A. Mackenzie, of Moor-Allerton Lodge, Leeds, would it not be possible to utilise their services until demobilisation in surveying the country by means of aerial photographs? Mosaics of these were of the greatest value in France for the purpose of siting the objects of military importance, such as earthworks, to the best advantage, and they would be undoubtedly of equal value to architects, surveyors, estate agents, and others, in developing land and in simplifying labour and drainage problems. Mr. Mackenzie says he can speak with confidence as to the value of aeroplane photographs in designing golf courses, which, although in itself of minor importance, is nevertheless an indication of its possibilities in other directions.

A paper by Mr. E. Beresford Chancellor, entitled "The Squares of London," was read last Thursday evening in the hall of the Royal Society of Arts. Mr. Chancellor feared the squares were likely to become the prey of speculative builders, which he deplored, because they were unique. St. James's Square was one of the oldest in London, and was the first to become a residential centre. Norfolk House was the keystone to this square, and the only private residence in London in which a monarch had been born—namely, George III. Grosvenor Square was the most magnificent. Soho Square was one of the most interesting by reason of its associations with Charles II. Red Lion Square was famous for its artist residents in years gone by, among whom were Burne-Jones and Rossetti, and Gough Square would be associated for ever with the name of Dr. Samuel Johnson. Mr. Chancellor appealed for the preservation of these squares, not only on account of their associations and their beauty, but because of their health-giving qualities, and paid tribute to the work of the L.C.C. in preserving open spaces for the general good of the public. Lord Bryce, who presided, deplored the lack of good architectural buildings in our squares, which, he said, compared very unfavourably with the houses on the Continent.

About forty pictures acquired during the war are hung in Room 19 of the National Gallery. Among them are the late Mr. Alfred de Rothschild's full-length Reynolds, the "Lady Bampfylde"; as a gift from Mr. R. C. Witt, a large picture, not quite finished, by the Venetian decorative artist, G. B. Piazzetta—a "Sacrifice of Isaac." Most of the unbought pictures are from the bequest by Sir Henry Layard, the best of which are the two works of Gentile Bellini, the old Sultan and the "Adoration of the Magi" Of the other early pictures may be mentioned the Masaccio (Madonna and Child with Angels), bought by the Trustees with the aid of the National Art Collection Fund; and the flying angel, matching one bequeathed by the late Countess Brownlow, which together form the upper parts of the two wings of the great altarpiece by Pesellino. Among later works are two Tiepolos of the Trojan Horse; a newly discovered small "Philosopher" by Rembrandt; and the "Lady and Child," by Vandyck, lately sold to the Trustees by Earl Brownlow. Recently the Government agreed to let the Trustees strengthen the modern French section of the Gallery by buying some pictures at the Degas sale in Paris. Among these are a sketch of a lady by Manet, the same artist's "Soldier with Rifle," and a portrait of a gentleman by Ingres.

The Board of Trade, deeming it expedient to make further exercise of the powers conferred upon them by the Defence of the Realm Regulations as respects timber, hereby order as follows:—1. Paragraph 2 of the Timber Control Order, 1918, shall no longer apply to purchases or sales of, or to agreements to buy or sell, imported hardwood (including plywood) within the United Kingdom. 2. Part II. (home-grown timber) of the Timber Control Order, 1918, is hereby revoked without prejudice to any act or matter done or suffered or to any prosecution or proceeding instituted or penalty incurred thereunder. 3. Paragraphs 15 and 16 (Part III., General) of the Timber Control Order, 1918, shall not apply from the date of this order to home-grown timber, and so much of the said Paragraph 15 and 16 as relates to home-grown timber is hereby revoked, and the said paragraphs shall be read and construed accordingly. Pursuant to the above Order notice is hereby given that from the date hereof the amount of imported softwood which may be purchased without a permit in accordance with paragraph 15 (a) of the Timber Control Order, 1918, shall be an amount not exceeding a total value of one hundred pounds in any one calendar month, and form "A" in the Schedule to the Timber Control Order, 1918, shall be varied accordingly as follows:—"I hereby certify that the purchase of imported softwood entered against my name is correctly described, and that it, together with any other purchases of imported softwood during the current calendar month (whether made directly or through third parties or from whatever source) without permit from the Controller of Timber Supplies does not exceed £100 in total value, and that this purchase is for work of national importance or urgent necessity."

The Rev. E. C. Bedford, M.A., Rector of St. Andrew's, Holborn, has just added to the interesting collection of portraits in the Wren vestry of the church those of Bishop Stillingfleet (1664) and Bishop Luxmoore (1806), both of whom were Rectors. The church has four other Bishops and an Archbishop on its roll of rectors, and Mr. Bedford hopes to be able to secure portraits of these—and especially of Archbishop Bancroft, and Bishop Hackett (of Lichfield). One of the portraits in the vestry is that of the famous Dr. Sacheverell, who for preaching a sermon against the Revolution was impeached by the Whigs before the House of Lords for high crimes and misdemeanours. His body lies beneath the rare altar of metal supports and marble top, and the story of the trial is amongst a number of interesting old pamphlets which the Rector is storing up in the Vestry.

An offer was made last March to the committee for the restoration of the Norman Priory Church of St. Bartholomew-the-Great to acquire the remaining six bays of the east walk of the cloister of the priory on the expiration of the existing lease in something less than eight years' time at the price of £2,000. The committee are now asking for help to secure this, the last, portion of the monastic buildings of the priory known to exist. At present it is a stable with 7 ft. of earth on the floor. The 800th anniversary of the founding of the church occurs in March, 1923, and this acquisition of the cloister would be a practical and suitable way to commemorate it. Subscriptions, which may be extended over three years, may be sent to the Rector, the Rev. W. F. G. Sandwith, the Vestry, St. Bartholomew-the-Great, West Smithfield, E.C.

The town clerk of Rochdale has been instructed to enter into negotiations for acquiring land, and Professor Abercrombie, of Liverpool, is to be engaged to prepare a housing scheme on terms announced by the Royal Institute of British Architects. Professor Abercrombie is engaged "subject to any modification of terms as may be agreed upon."

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CHIPS.

It has been decided to build a new Primitive Methodist church at Hedon, Hull.

Messrs. W. Lawrence and Son, of 19, Finsbury Square, E.C., are carying out extensions to the Hornsey Electricity Works for the Council.

Owing to the closing of the greater part of the schools there will be no exhibition of students' works or distribution of prizes this year at the Royal Academy.

Mr. Sheriff Banister Fletcher, C.C., will take "The Mediæval Architecture of Fortified Towns—Castles and Hotels de Ville," as the subject of his lecture to-morrow at the L.C.C. Central School of Arts and Crafts.

The death is announced of Mr. T. Massey, head of Messrs. Isaac Massey and Sons, Alderley Edge, one of the oldest firms of contractors in Cheshire. He was formerly surveyor to the Alderley Edge Council.

Major B. J. Ryan, Royal Engineers, a student of the Society of Architects, who received the Military Cross some little time ago, has recently been appointed a Cavaliere of the Crown of Italy, for his services on the Italian Front.

Mr. James Meikle, Woodside, Carrick Road, Ayr, whose death is announced, was chief of the firm of Messrs. J. and D. Meikle, joiners and building contractors, and had been Master of Works and Dean of Guild of the Burgh of Ayr since 1909.

In succession to the late Mr. Robert Ross, Mr. Frank Rinder, art critic of the *Glasgow Herald*, and the author of numerous books on art, has been appointed art adviser to the Felton Bequest Committee and the Trustees of the Melbourne Art Gallery.

The muniment chest of Charles I., covered with leather and elaborately brass nailed in various designs, was sold at Sotheby's last Friday for £66 (Parkenthorpe); and a Stuart sampler, by Mary Hurst, 1661, with figures of a lady and children, for £36 (Glaisher).

Dr. A. Cowley, Fellow of Magdalen College, Oxford, has been appointed to deliver the Schweich Lectures on Biblical Archæology, and will give three lectures on "The Hittites" (illustrated by lantern slides), on December 12, 16, and 19, at 5 o'clock, in the Theatre, Burlington Gardens, W. These lectures are free, by invitation, for which application should be made in writing to the Secretary, the British Academy, Burlington House, W.1.

The Surveyors' Institution has been asked by the Director-General of Demobilisation to assist in securing the release from the navy, army, and air force of surveyors who may be looked upon as pivotal men—i.e., men who, if released, would at once be engaged in preparing schemes of constructive work, such as building, road-making, drainage, afforestation, agriculture, etc., which would provide employment for other men on demobilisation.

Of the 656 Old Boys of Kingswood School, Lansdown, Bath, who have been serving in the war, 96 have lost their lives, and as a memorial to them a chapel is to be added to the present school buildings, which overlook the city of Bath from Lansdown Hill. The committee ask all who have not yet subscribed to send their contributions either to the treasurer of the fund, the Rev. Marshall Hartley, 24, Bishopsgate, E.C., or to the secretary, the Rev. A. E. Raw, C.F., Hamilton Manse, Tidworth, Hants.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

EASINGTON LANE AND EPPLETON (DURHAM).—For washing down walls and ceilings at the Easington Lane and Eppleton Schools, for the Durham County Education Committee:—
S. H. Robinson, Houghton-le-Spring £77 10 0
(Recommended for acceptance.)

EAST HAM.—For supply of timber, for the East Ham Town Council:—
Gray, G. E., Ltd. £201 3 0
Recommended for acceptance.

(Recommended for acceptance.)

LEWISHAM.—For repairing and making good chairs and office stools in the Town Hall, for the Lewisham Borough Council:—
W. Peppercorn..... £68 9 0
(Recommended for acceptance.)

STOKE NEWINGTON.—Alterations, etc., at Barton House, for the Stoke Newington Borough Council:—
F. Parsons and Son £97 0 0
(Accepted.)

WALSALL.—Completion of the Pleck stormwater sewer, for the Corporation:—
W. Ellis, Birmingham (accepted).

LIST OF TENDERS OPEN.

BUILDINGS.

Dec. 31.—Completion of 14 houses (exclusive of street works) at Gellifaeleg, Penydarron, and Merthyr Tydfil.—For the Corporation.—Particulars from the borough architect, Town Hall, Merthyr Tydfil. Tenders, endorsed "Gellifaeleg Houses," to T. A. Rees, Town Clerk.

FENCING.

Dec. 16.—Supply and erection of chestnut fencing, etc., for allotments. Plans and specifications, bills of quantities, and form of tender on application at the City Engineer's Office, Town Hall, Manchester, on payment to the City Treasurer of £1 1s. Tenders to the Chairman of the Small Holdings and Allotments Committee, Manchester.

GLAZING.

Dec. 14.—Glazing of the public lamps in the districts comprising the lighting area within the city boundaries.—For the Nottingham Gas Committee. Tenders to W. J. Board, Town Clerk, Guildhall, Nottingham.

SANITARY.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

CHRISTMAS.

In order to complete publication before Christmas Day, and enable readers to get their copies at the usual time, our issue of that week will be published at 2 a.m. on the morning of Tuesday, December 24.

The latest time, therefore, for the receipt of advertisements will be 1 p.m. on Monday, December 23.

RECEIVED.—F. E. P. and Son., Ltd.—W. L.—W. T. H.—B. A. Co., Ltd.—I. C. S.—J. B. and Son—L. F. C. Co., Ltd.—H. J. H.—S., Ltd.—H. and Son—H., Ltd.

N. S.—Yes.

AQUATINT.—Thanks, no.

MAJOR G. F.—We have returned as requested.

NOT DEAD YET.—In view of not a few kind inquiries and condolences from readers who have seen a short, but too flattering, biography of us on p. 10 of the *Newspaper World* of November 30, we venture to state that the information of our death given in the opening sentence is inaccurate. The writer has apparently seen some of the kindly notices of our recent loss, by the death of our son, Mr. Charles E. B. Kibblewhite, and killed us as well.

J. N. (Brighton).—In London the best thing of the kind has been done on the London County Council's estates—notably at White Hart Lane, Tottenham, which, with others, were fully illustrated and described on pp. 77, 97, 115, 135, 165, and 175 of Vol. CXIV. We do not think your desire at all Utopian, but till the masses unite to boycott all M.P.'s who will not insist on real Housing instead of flocking to vote for windbags as they will next Saturday, they will have to live in slums.

TO ALL READERS AND ADVERTISERS.—The prospect of early peace encourages the hope that at no distant date the restrictions on newspapers of the past four years which have so harassed all of us will be removed, and we shall return to normal conditions of production. But not, we fear, at so early a period as we could wish. Paper is *still* rising in cost, and the price for our December deliveries is the highest yet paid. Printing and engraving are still double war prices. We are completely in the dark as to the Paper Controller's intentions with regard to next year's supply, which limited us to half the quantity used in 1917. So that the already gratifying return of readers as subscribers who have missed their paper so long, and of advertisers who are naturally anxious to re-occupy space we have not been able to give them, is not altogether without embarrassment. Old readers and constant advertisers must, of course, be first, as far as possible, and we respectfully ask all readers who usually renew their subscriptions about the end of the year, and all advertisers whose contracts with us fall out about the same time, to favour us with their instructions *as soon as possible*. Other readers and advertisers whose commands may reach us too late are assured we shall only too gladly welcome their return when our circulation and our space are once again equal to the normal demands of pre-war days.

The Ruhleben Exhibition, to be held at the Central Hall, Westminster, will be opened on January 14, by Princess Patricia and the Duke of Connaught. The exhibits are the work of British civilian prisoners of war at Ruhleben Camp, and comprise models of ships, machinery, pictures, oil paintings, water colours, sketches, caricatures, silverware, bookbinding, and leather work. Ruhleben is the only camp where it was possible to establish an arts and crafts movement. There will be shown a small scale model of the camp.

Chief Offices: 352 to 364, EUSTON ROAD, LONDON N.W. Telegrams: "COURTEOUS, EUSROAD, LONDON." Telephone: MUSEUM 3932 (5 lines).

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December 18, 1918. Volume CXV.—No. 3337.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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East Ward Branch Library and Cottage Baths, Undercliffe Street, Bradford. View, plans, and sections. Mr. W. Williamson, Licentiate R.I.B.A., City Architect.
Old English Grate and Fireside Wrought Ironwork. A sheet of sketches in detail by Mr. Maurice B. Adams, F.R.I.B.A.

Currente Calamo.

The Council of the Society of Architects has recently adopted a very comprehensive scheme of reconstruction calculated greatly to increase the resources, scope, and utility of the society, render it more extensively serviceable to its members and facilitate its work in connection with the various progressive measures of reform which it has in hand. Some of the proposals will develop with the growth of the society, but the chief and most important one, which is connected with the professional defence, is now in operation. The Council has established, with the guidance and approval of its legal advisers, regulations enabling members in certain cases to apply to the society for advice on points of law arising out of their professional practice, and for assistance in helping them to defend cases where questions of professional principle are involved. This scheme is an extension of the scope and power of the Board of Professional Defence set up by the Council some years ago, in connection with which the nucleus of a Defence Fund is already in hand. It is not intended that these facilities for advice and defence in professional matters shall be available for architects' clients. These will continue to seek their own legal advice as heretofore. The society's scheme is intended solely for the assistance and protection of architects as such, and its scope is restricted to architects who, being members of the society, may have occasion to apply to their society to assist them in protecting their own professional character, status, and interests, and in promoting honourable practice. This extension and development of the society's activities will, we are sure, be of considerable general interest, and the Council cordially invites any architect who desires to know more about the society and its work to communicate with the secretary at the offices of the society, 28, Bedford Square, W.C.1.

The Executive Council of the Operative Bricklayers' Society has sent the following resolution to the Prime Minister and the Minister of Labour:—

That, owing to the closing down of building operations and consequent discharge of so many of our members by the Government, the question of unemployment is becoming very serious among bricklayers and other constructional building trades.

We, therefore, call upon the Government to release all building materials in their hands, reopen brickfields with all possible speed, and at once start building operations where work has been suspended owing to the war.

We trust this most reasonable demand will receive more attention than has been vouchsafed so far to all remonstrances by the representative bodies of our various industries, those of masters and men alike. For nine years now our successive Governments have been, either besottedly or deliberately, working to bring about unemployment in the second great group of industries in the country. Blindly concurrent, the last House of Commons tolerated this. If the new Parliament is similarly stupidly obstructive, it will succeed in transforming hundreds of thousands of the most loyal workers in the realm into bitter enemies of "order" that means starvation, and complete the ruin of hundreds of employers, for no other reason that we can conceive than to facilitate the return of the German exploiters, who in the past have been encouraged by the connivance of some of their friends here in high places. At present we are told by the Press Bureau that "with a view to encouraging the industry to increase the output of bricks, to meet the prospective demand, it is the intention of the Minister of Munitions, provided the present system of control continues, to maintain the present controlled maximum prices for a period of six months from January 1, 1919."

Professor W. A. Bone's timely lecture on December 10, at the Imperial College of Science and Technology, was a reasonable rebuke to the Coal Controller, and a much-needed reminder that "for the luxury of a Coal Controller we are being taxed no less than forty to fifty million pounds sterling per annum." His strictures on the absurdity of the conditions, and the high charges of the electricity undertakings were also most apt. His rebuff to the "iconoclasts who condemned outright the Englishman's cheerful fireplaces" was well based on facts. Even now, one great metropolitan gas company has discovered how the living-room fireplace can be used in conjunction with, and not superseded entirely by, gas to provide the hot water wanted in the lower and middle-class houses, and we shall probably see the idea put into practice in many of the housing schemes now maturing. "By abolishing the open grate we might save coal, but we should lose England," said Professor Bone, and certainly, so far, no other heating agent has proved a satisfactory substitute. We cannot help wondering whether Sir Guy Calthrop really knows that, in London, those who have defied his regulations have had no difficulty in getting the coal they wanted, and are still getting it; while those who obeyed them cannot get their rationed quantity? He presumably knows how many people in the metropolitan borough of Islington, for instance, have failed to register. A little judicious observation and inquiry, especially in the northern districts of that borough, where some of the dealers' trolley-carts are still delivering to such, while interim orders given to registered consumers, and paid for long ago, are disregarded, might possibly induce fairer distribution.

The Minister of Munitions gives notice that he has fixed export prices of Pig-iron applicable to all exports of pig-iron on and after December 2, 1918, until further notice. The existing maximum prices of pig-iron for home delivery remain in force until further notice. The Minister of Munitions gives notice that he is fixing new maximum prices of steel for delivery in the United Kingdom on and after February 1, 1919. Until that date the existing maximum prices remain in force. The Minister of Munitions gives notice that he is fixing export prices of bar iron applicable to all exports of bar iron on and after December 2, 1918, until further notice. Particulars of the above may be obtained on application to the Ministry of Munitions (C.I.S.P.), Room 104, 8, Northumberland Avenue, W.C.2. During the war, while the Government was practically the sole purchaser of iron and steel products, the Ministry of Munitions adopted the policy of stabilising prices in the iron and steel industries by paying direct to the makers certain increased costs due to war conditions. Now that the Government is no longer the sole purchaser, it is desirable to place the industry on an economic basis as early as possible, but the great increase in prices which would result from an immediate withdrawal of all subsidies would seriously prejudice the resumption of ordinary commercial work and induce dislocation not only in the iron and steel trades but in the wide field of engineering and other activities dependent on iron and

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steel. The Government has therefore decided to remove the subsidies in two stages. Those applicable to steel-making will be removed on January 31, 1919, when a revised schedule of maximum prices for steel will take effect. Those applicable to pig-iron will continue to April 30, when it is proposed that all subsidies should cease entirely. This will involve a further readjustment of steel prices, but post-war conditions are not yet sufficiently stable to warrant the fixing of prices after that date. Arrangements have been made in consultation with the trades concerned to secure an equitable distribution of pig-iron and steel so long as any subsidies continue. The powers possessed by the Government under the Defence of the Realm Act will, if necessary, be exercised to prevent any undue holding of subsidised material. It is not, however, intended that Government subsidies should be used to enable exports to be made to overseas markets at less than the full cost. The Ministry have, therefore, issued lists of export prices for both iron and steel calculated to include the full amount of the subsidies. The Government will levy as a drawback on exported iron and steel the difference between the home and export prices.

THE DEPARTMENTAL COMMITTEE ON BUILDING BYE-LAWS.

It is possible that most readers have forgotten that in the spring of 1914 Mr. Herbert Samuel, then President of the Local Government Board, appointed a Departmental Committee "to consider the control at present exercised in England and Wales over the erection of buildings and the construction of streets by means of bye-laws and local regulations, and their effect upon building and development, and to make recommendations." We complimented Mr. Samuel at the time on the skill with which the reference had been compiled with the laudable intention, common to all politicians, of ensuring that nothing should ever come of it, and later in the year on the camouflage which veiled that determination at each of the nine meetings which were held during the session which ended in July, 1914, just before the war broke out. Whether Mr. Samuel, like more of his colleagues of that time, knew the war was coming and that Departmental Committees of all sorts would be among its earliest victims, we do not know. Anyhow, it sunk into a state of suspended animation till October, 1917, when Mr Hayes Fisher revived Mr. Samuel's bantling and gave it a strengthening dose in the shape of Mr. Stephen Walsh as chairman, and now its report is issued (Cd. 9213), and can be had of the Government printers for 6d. through any bookseller, as made to Sir Auckland Geddes, the President of the Local Government Board.

We do not think much will come of the report, and we do not think that will much matter. The amiable initial anxiety displayed by its members to guard the committee against any suspicion that it takes sides for or against the local authorities who have been criticised is, perhaps, due to conscientious twinges raised by the conviction that the Local Government Board's own model bye-laws have not infrequently been pleaded by authorities in justification of their action. Anyhow, we are told "What is important is whether or not the state of the law is such that those authorities could, if they wished, behave unfairly or oppressively." If that is so, we are asked to believe that both by the drafting of their model series and by their practice in the revision and confirmation of bye-laws made by the local authorities, the Local Government Board have done as much as can be done under the existing law to avoid hardships and difficulties in the control of building and development, and that such improvements as are required in the system can in consequence be carried into effect only after legislation. "It will be seen," says the report, "that almost everyone of our suggestions involves legislation, and that most of them are for alterations in the machinery of control by which it may be brought up to date and put in order, our view being that

NO REVOLUTIONARY CHANGES HAVE BEEN SHOWN TO BE DESIRABLE."

This is qualified, it is true, by a truly Pecksniffian aphorism which we advise all candidates for the next Parliament to save up. It has an Addisonian flavour about it which will, at any rate, commend itself to all who want a coalition of the coming Ministry of Health with the Local Government Board of the sort Mr. Lloyd George has been working at the elections! Read how it rolls off the tongue: "Where old bye-laws are in force," the Committee remark, "they are not only an obstacle to actual building and development, but in the hands of an authority which is not inclined to progress they can be used as a weapon to secure the confirmation of fresh bye-laws which otherwise would not be allowed." Which nobody can deny!

SUMMARY OF RECOMMENDATIONS.

Whether it is likely to be remedied by the recommendations summarised is another matter. With many of them we are heartily in accord. They are as follows:—

That the statutes in the general law authorising the making of bye-laws be consolidated.

That any obvious gaps in the existing powers be stopped up and clear deficiencies be remedied.

That, in particular, the existing statutory definitions of "new building" be taken into consideration with a view to such an amendment as will secure that works which cannot reasonably be subjected to the control properly applied to the erection of a new building are not classed as such.

That certain powers which have been incorporated in common-form clauses in local Acts be made available in the general law, and that the existing practice of Parliament not to give special local powers for purposes which can be secured by bye-laws under the general law be maintained.

That all sections in Acts of Parliament giving powers with respect to new streets and buildings should, so far as possible, take the shape of authorising bye-laws to be made; that, in relation to the control of streets and buildings, bye-laws made by the local authority and confirmed by the Board should be recognised as the standard method of control, to the exclusion (unless bye-laws are clearly the less appropriate method) of direct statutory provisions, of discretion, and of "regulations"; and that, where Parliament is satisfied that new local Act powers are essential, they should whenever possible be in the shape of a bye-law-making power. That local Act sections be required to be printed and supplied without charge as bye-laws are.

That when a clause in this shape is shown to the satisfaction of the Local Legislation Committee to be unsuitable, any powers given with respect to new streets and buildings should be limited in point of time, with authority to the Board to extend the time by Order (not provisional).

ABOLITION OF REGULATIONS.

That regulations, as distinct from bye-laws, be abolished.

That the distinction between urban authorities and rural authorities in respect of their bye-law-making powers be abandoned, leaving it to the Local Government Board, under Section 184 of the Public Health Act, 1875, to refuse to allow unnecessary or unsuitable bye-laws proposed by an authority of either class.

That in the Act for the foregoing purposes, when it has enumerated the specific topics on which it is considered bye-laws should be made, there should be a section giving power to the Local Government Board to add other topics, by Provisional Order, as they now can do when a specific bye-law-making power is given in a local Act.

That Section 144 of the Housing, Town Planning, etc., Act, 1909, which gives the Local Government Board power in certain circumstances to require the repeal of an existing bye-law, be amended so as to get rid of the words which have prevented the power from being an effective one; the power being at the same time so extended that advantage may be taken of it in relation to other buildings as well as houses for the working classes.

That a time limit according to the date of their confirmation be put on the continuance of all bye-laws, including those to be confirmed hereafter.

That, in order to facilitate the amendment of existing local Act provisions the Local Government Board be given power, after a local inquiry, to make amending Orders which, in the absence of opposition, need not be provisional. That, where it is desired merely to repeal a local Act section for the purpose of replacing it by a bye-law to the making of which the section is an obstacle, local inquiry may be dispensed with, and the repeal may be effected by a provision included in the certificate of confirmation of the bye-laws.

REJECTION OF PLANS.

That a local authority who reject a plan should be required to specify in writing the particular respect in which its carrying out would be illegal.

That, on a joint request from the local authority and the person whose plan has been rejected, the Local Government Board be empowered to decide (subject to a power to state a case for the High Court if the Board see fit) whether the rejection is or is not lawful; that any such decision be binding on both parties and on any Court before which the question whether the particular plan complies with the law may come.

That, failing an agreement to refer the legality of the rejection to the Board, either party be given a right to apply to a Court of summary jurisdiction, with appeal to Quarter Sessions, for a declaration whether the rejection was or was not lawful; that any declaration so obtained be binding except in the High Court.

That, in relation to bye-laws as to the level, width, and construction of new streets, binding force should be given to conditions embodied in the bye-laws and adopted by the developing owner, under which he has obtained the benefit of a reduction of the general requirements of such bye-laws.

That bye-laws be authorised for fixing the distance between the buildings in new streets, and that the Public Health (Buildings in Streets) Act be repealed.

That power be given to prevent a street once laid out in accordance with the bye-laws from being altered in such a way that if at first so made it would have contravened the bye-laws.

NEW STREETS.

That clauses with respect to new streets should, so far as practicable, include provisions to secure that at the stage of laying out some constructional work of at least an elementary character be done.

That, following on this, local authorities should, in relation to the taking over of a street under Section 150 of the Public Health Act, 1875, or under the Private Street Works Act, 1892—

(i) be required when putting forward their constructional bye-laws for new streets to formulate in advance a maximum specification or specifications, on compliance with which or with the appropriate one they will take over streets, and that such specification should be submitted for the approval of the Local Government Board under Section 184 of the Public Health Act, 1875, in the same manner as a bye-law;

(ii) not be allowed to require at the stage of taking over the destruction of work executed in accordance with the bye-laws or with such a specification at the stage of laying out and still in good condition.

ENFORCEMENT OF BYE-LAW.

That it be made the duty of every local authority to adopt at least some building bye-laws, and that periodical returns be made to the Board of the number of plans submitted

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in accordance therewith; that machinery be introduced whereby, in default of the making of necessary bye-laws, the Local Government Board may put in force by Order provisions which shall have effect as if they were bye-laws made by the authority.

That if a local authority makes default in the enforcement of bye-laws, the Local Government Board shall have power, as they already have in London with regard to bye-laws made under the Public Health (London) Act, 1891, to appoint the county council to execute the bye-laws in place of the local authority. That if a local authority neglect or decline to enforce a particular bye-law in a proper case the county council, or any ratepayer or inhabitant of the district, be empowered to take proceedings to enforce it, suitable provision being made as to the reimbursement of costs.

That the existing exemption in the model bye-laws in favour of buildings erected under the Improvement of Land Acts be deleted and, as local bye-laws are revised, be gradually swept away. That the other existing exemptions in favour of buildings in which various Departments of the Government are interested be reconsidered, and be made, where necessary, the subject of negotiation with the Departments concerned, with the object of securing that as a rule all buildings, even if erected by a public body for a public purpose, shall come within the purview of the local authority. That no new exemption be given in favour of buildings erected in accordance with plans approved by any Government Department. That the existing exemptions be revised so as to secure, if possible, compliance with drainage and certain other necessary bye-laws.

URGENT REFORMS.

It will be universally recognised, say the Committee, that the revision of any obstructive bye-laws which may be found to exist is an essential part of the work of reconstruction. Problems of the housing of the working classes, especially under conditions caused by the war, and likely for some time to persist, will show local authorities more clearly than ever before the necessity of bringing their bye-laws into line with the most approved methods of development. Whilst it is important to remember that the housing of the working classes is only part of the field which bye-laws cover, the general revision to which housing schemes may be expected to give rise will benefit other forms of building and development. The Local Government Board will doubtless, following the policy which dictated their circulars of 1906 and 1912, do what they can to stimulate revision as soon as the position (for instance, in regard to the staffs of local authorities) has sufficiently improved; but their powers are now so limited that the present need for speedy action lends urgency to the plea we make for amendment of the law. We are of opinion that steps should be taken to give effect as soon as practicable, to all our recommendations, but above all to the third ("new building" definitions) and tenth (Amendment of Section 44 of the Housing and Town Planning Act, 1909), whilst the eleventh and twelfth are also of great importance. The third has become urgent by reason of the defect in the Public Health Acts Amendment Act, 1907, disclosed in the recent Repton case: the tenth proposes to cure what is the one great defect in the bye-law system as it now exists, namely, the absence of an effective power in the Local Government Board to withdraw their confirmation of a bye-law if subsequent experience shows that it should not remain in force.

The committee made short work of the suggestions made by witnesses who appeared before it and propounded them. That supported by four representatives of the Royal Institute of British Architects seems to us to have deserved a better reception. The system they thought might be adopted for deciding disputes was that which operates in London under Part cviii. of the London Building Act, 1894, when there is a dispute as to party structures—viz., that where an owner wishes to build partly on his own and partly on his neighbour's land, or to interfere with a structure already built on that position, he gives notice to his neighbour, and the two of them agree upon a surveyor, who shall control the work and apportion the cost. In default of agreement, each appoints his own, and the two surveyors so appointed choose a third. A decision of two of the surveyors is binding on both owners, subject to certain provisions for taking matters into Court. But the committee declined to assent, because bye-laws are "a part of the public law of the country—in fact, of the penal law."

Equally repugnant to the committee was the setting up of a special tribunal in London, on the lines of the Tribunal of Appeal under the London Building Act, because, they say, "The Board can always command expert assistance where this is required," and, "moreover, the decision of cases of interpretation has not been in the past a matter for experts, whether architects, engineers, or others," and "would be more suitably left to the Board, who have an administration staff with legal and technical advisers, than to, any technical body."

So the pith of the matter is to be found in the conclusion arrived at, with regard to bye-laws, firstly, that the principle admitted by Parliament in Section 44 of the Housing Town Planning Act of 1909 should be "made to work"; secondly, that bye-laws should be subject to periodical review; and, thirdly, that the Board, if requested by both parties, and the local Bench, on application by either party, in default of a joint request, should have a power to interpret bye-laws before the work in question has been executed. Frankly, we do not think this would advance matters much.

The report is worth preserving in so far as it may prove a useful reminder of past cases bearing not only on bye-laws as affecting buildings, but the control of streets, exemptions, and other kindred subjects. That it will form a satisfactory basis of legislation we do not believe. If it is worth while, bearing in mind that the Local Government Board is probably under notice to quit as a separate department, and that nobody knows what its status will be as a mere branch of the "Ministry of Health," which is the ideal of the moment, we hope and are inclined to believe that Sir Auckland Geddes will seek counsel at the hands of a committee on which there shall be better representation of people who know more about the matter than the good people who have—quite naturally, perhaps—so holy a terror of "experts" and so profound a faith in officialdom.

A Calvary was dedicated last week at Moseley in memory of the men from Moseley who have fallen in the war. The Calvary faces the public highway, being placed within the grounds of the Moseley Parish Church, is of Portland stone, and was erected by church people and residents of Moseley at a cost of about £600.

An anonymous donation of £5,000 has been made to the St. John's Catholic Building Fund by a donor who desires to remain unnamed, now resident in the south of England, but formerly a well-known figure in certain phases of Rochdale life. Canon Chipp has already over £10,000 towards his new church, and a start will be made as soon as war conditions permit.

A fund has been opened in the parish of St. Ann, Brondesbury, for a memorial to the men of the parish who have fallen in the war. It is proposed that the memorial shall take the form of a stained-glass window in the chancel of the church, and a brass plate with the names of the dead at the west end. The hon. treasurer is Mr. H. V. Geddes, of 21, Dundonald Road, Brondesbury.

A recently published report of tests of reinforced concrete, carried out by a committee of the Austrian Society of Engineers and Architects, shows that an iron content of 2.02 per cent. is insufficient. Test-bars containing only that proportion of reinforcement proved to be too weak, the limit of ductility for the iron being reached before that of the compressibility of the concrete.

Our Illustrations.

"GREYFRIARS," CHURT, SURREY.

These photographs were exhibited at the Royal Academy last summer by the architect of the house, Mr. E. Turner Powell, F.R.I.B.A., of 13, Queen Anne's Gate, Westminster. "Greyfriars" is built in brick with tiled roofs, and the interior has several features of interest very conveniently arranged in an economic and appropriate way without pretension.

EAST WARD BRANCH LIBRARY, AND COTTAGE BATHS, UNDERCLIFFE STREET, BRADFORD.

This building occupies a site in the populous East Ward area, and has frontages to Undercliffe Street and Tennyson Place of 90 ft. and 67 ft. respectively. The level of the site was very much lower than the adjoining streets, which, together with the steep gradient of Undercliffe Street, necessitated a lower ground floor storey, to raise the building to an appropriate height above the street levels. This floor is well lighted and ventilated from the areas consequent upon the setting back of the building from the street lines. A portion of this floor has been rented by the Baths Committee, who have provided a complete installation of cottage baths for men and women, inluding slipper, douche, and children's baths. The remainder is utilised for the heating chamber and book repairing and store-room for the library.

The library premises are on the upper ground floor level, and the entrance is from Undercliffe Street. A wide flight of steps leads into the vestibule, which opens on to a spacious entrance hall 35 ft. by 8 ft. 6 in., and makes liberal provision for the passing to and fro of the public to the different departments which are grouped round this hall. The lending library occupies the central position, with the space for attendants, the end of which has a glazed screen in the form of a bay-window, conveniently overlooking the main entrance, the entrances to the general reading room and junior reading room, also staircase to the women's room. The floor of the portion allocated to the attendant is raised above the general floor of the library 6 in., and the usual "in" and "out" wicket gates are provided, both being well under control. This department, which is on the open access principle, has book stacks on the walls, and in addition isolated book stacks arranged on radial lines, which affords full supervision of the lending department. The system adopted is on the most up-to-date lines of library practice. Provision is made for the accommodation of 12,000 volumes, all of which are free of access to the general public. The reading room, which is 36 ft. 6 in. by 22 ft., is planned on the north side of the building. Reading tables are fitted round the walls under the windows, in addition to central tables and newspaper stands, and there is accommodation for 71 readers. In the corresponding position on the south side of the building is situated the junior reading room, 28 ft. 6 in. by 22 ft., and at the end of this room is the attendant's space and counter. The readers in the junior room are all placed so that they face the attendant, thus ensuring full supervision of the readers. The women's room occupies the central portion of the build-

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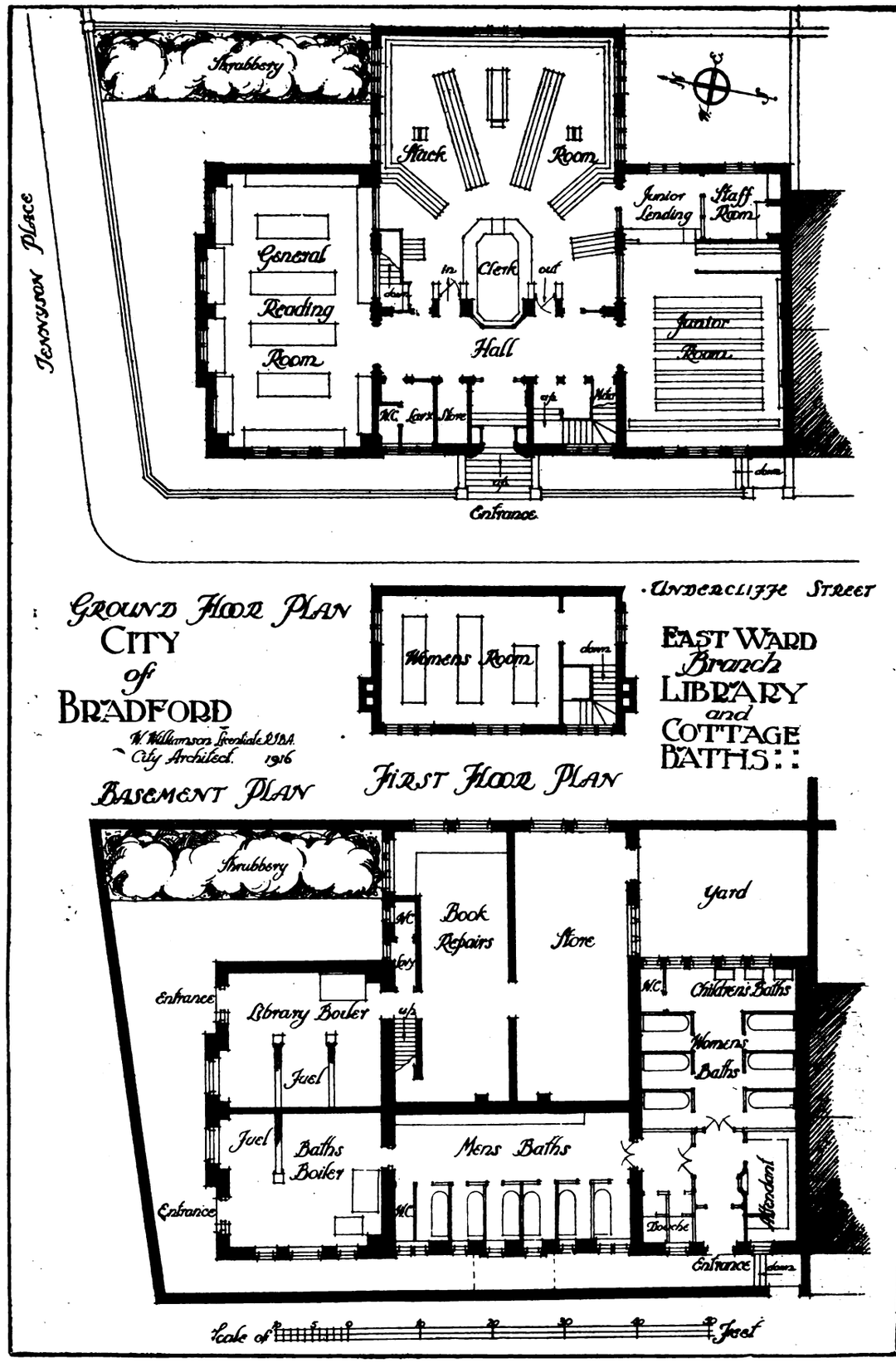

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ing on the first floor, is 25 ft. by 18 ft., and is reached by the staircase from the hall, which is directly under the supervision of the librarian. The disposition of this room secures its privacy, and at the same time it is convenient of access.

The general planning of the building has been arranged to secure efficient supervision, at the same time preserving the balance and symmetry of the lay-out. The elevations are very simply and broadly treated. Local wallstones have been used, and in the principal elevation ashlar dressings have been introduced sparingly. The city coat of arms, carved in stone, is placed over the entrance, this being the only carved ornament introduced. All internal furnishings and fittings are executed in selected oak, and of simple design, but appropriate in character with the rest of the building. The heating and ventilation of the premises have received careful attention, low pressure hot water heating having been adopted. Fresh air inlets are formed through the outer walls at several points, and the air passes over the hot pipes or radiators as the case may be, and there the air is warmed as it enters the building. The foul air is extracted at the ceilings in the rooms and is conveyed by ducts in the roof to a large central chamber, and extracted by means of an electric fan which is fixed in the base of the ventilating Fleche, and forms a feature in the elevation of the building.

The cost of the building, including the library and cottage baths equipment, was £6.780. The building was executed by local contractors, under the supervision of, and according to the plans prepared by, the city architect, Mr. W. Williamson, Licentiate, R.I B.A.

OLD ENGLISH GRATE AND FIRESIDE WROUGHT IRONWORK.

The objects represented by these sketches need little description, because each piece was so well adapted to its particular purpose, and if the old grate perhaps has become obsolete, no better sample could be found of the legitimate use of wrought iron. Such pieces may be reckoned as museum objects or fit for private collections of old craftsmanship, but to the practical smith and the practising architect good traditional old smithery furnishes the best possible guide for the befitting adaptation of wrought ironwork to contemporary uses, having regard to its inception, form and texture. Sir Joshua Reynolds, remarking upon the value of precedent, said, "The more extensive your acquaintance is with the work of those who have excelled, the more extensive will be your power of invention, and, what may appear still more like a paradox, the more original will be your conceptions."—(Discourse II.)

Mrs .Anne Maria Phelps, of Royal Parade, Cheltenham, who left £26.867, has bequeathed £3,000 for rebuilding Drewen Congregational Chapel, Newcastle Emlyn, and £1,000 to the Cheltenham General Hospital.

The Woolwich Borough Council have approved a scheme for the construction of a tube railway under the river on the Kearney high-speed mono-rail system. It is proposed that the line shall run from the main Arsenal gates to North Woolwich railway station, and it is estmated that the journey under the Thames will be completed in one minute.

The thankofferings to St. Paul's Preservation Fund (for the protection of the Cathedral from air raids) reached last Thursday a total of £2,088. The work of the fabric is steadily progressing. In a few days the removal of the hoarding round the south-west pier will be completed, and the monument of Nelson, which had been hidden during the war, will be restored to public view.

THE SURVEYORS' INSTITUTION.

(*Continued from page 396.*)

FIFTY YEARS OF LIFE.

Such then, shortly, is the record of the work of the Institution during its fifty years of life, and if I desire to pay tribute to the efforts of the presidents, members of the council, and members who during the first thirty or forty years bore the brunt of an uphill fight, and laid the foundation so firmly and securely, those past-presidents who are still with us will understand my meaning, and will not think that I wish in any way to belittle what has been done of more recent years. But there can be no doubt that had not the work of the earlier days been done with thoroughness, foresight and care, those who followed would not have been able to take their part in the more important professional and national work which year by year is imposed upon them, nor would the Institution have attained the position which has justified its opinion being sought. I feel every confidence in assuring public departments, and others who may ask for assistance upon subjects within our purview, that the traditions laid down by our predecessors will be upheld, and any matters brought before us be dealt with on broad, impartial, and business-like lines; and that any opinions or advice which may be offered will, to the best of our ability, be based upon a careful consideration of all the interests concerned, and given only after bringing to bear on the question submitted an extensive and unique professional knowledge collected from all parts of the kingdom. In giving this assurance I feel sure that I shall have the support and co-operation of all our members, and that each individual will do what lies in his power to strengthen the Institution in carrying out this important duty by dealing in a wise and statesmanlike manner with the changes, almost amounting to a revolution, which we see before us in the period of reconstruction after the war, and which must intimately affect the many interests with which our profession has to treat.

In all associations, however able and energetic the members entrusted from time to time with their administration may be, an important part of their success must depend on the head of the staff. I wish to place on record in this address how fortunate the Institution has been in its secretaries. No one had more at heart the welfare of the Institution than the late Julian Rogers, our secretary for so many years. In his successor, Alexander Goddard, our present secretary, I have no hestitation in saying we have a man of great ability, and than whom I do not think it would be possible to find a more suitable officer.

I must not detain you longer, but before I sit down there are two points to which I know that all would wish me to refer, although there are many others which for want of time I must pass over.

The Benevolent Fund forms an essential part of our work. Founded in 1901 it has steadily done more and more good work, and particularly so during the war, thanks to the Special War Fund collected by my predecessor in this chair during the first year of the war, the late Howard Chatfeild Clarke. But I cannot refrain from saying that I do not think that, on the whole, the fund receives the support from the great mass of members which its object merits. When I tell you that only a small percentage of the total membership subscribe to it, I think you will agree that there is some justification for the opinion I have ventured to express. I am aware of the many calls which are made on all, particularly at present, but do let me impress upon you the needs of the Benevolent Fund, and ask you to give it your support. Do not be deterred by the fact that the subscription which you might feel justified in sending is small. We wish to interest the largest possible number of members, and the secretary will gladly send copies of the annual report to any desirous of knowing something more of its work.

MEMBERS AND THE WAR.

I conclude my address with the subject which is uppermost in all our minds—the manner in which members have taken their part in the combatant services during this dreadful war. I designate it as "dreadful" because of the great suffering and sorrow it has brought in its train, but when we consider the objects with which we and our Allies entered upon the war and the glorious deeds of heroism and self-sacrifice which have accompanied it, I am not sure that that term is not out of place. The thought of these may help to temper the sharpness of the sorrow of those who have lost those near and dear to them, while the wonderful attainments of the Allied armies on the Western, Macedonian, and Palestine fronts during the last few months lead one to hope that the end cannot be far distant. Indeed, I sincerely hope that before the end of my year of office I may be able to meet you here to celebrate a permanent and effective peace, and that the position may then justify some outward recognition of this Jubilee year of our Institution.

With regard to members serving, it is impossible to keep in touch with all, or correctly to record the figures at any particular time, but approximately some 2,420 of those connected with the Institution have joined the naval or military forces, the total membership at the commencement of the war being about 5,380—a truly wonderful record. This is entirely outside those who are doing war work of a non-combatant nature, the number of whom cannot be estimated, but must comprise a very large proportion of the remainder.

Unfortunately such a record could not be achieved without a long list of casualties, and I regret to say that the number of those known to have made the great sacrifice now amounts to 247. We all honour their memory and extend our sincere sympathy to their relatives.

Turning to the happier aspect of the case, I am glad to say that the good work done by members serving is evidenced by the large number of naval and military distinctions which have been earned, and which are known to include one C.B., three C.M.G., one M.V.O., sixteen D.S.O., one D.S.C., four bars to M.C., 104 M.C., three D.C.M., one M.M., one M.S.M., one Order of St. John of Jerusalem, and the following foreign Orders:—Three Croix de Guerre, the Chevalier de l'Ordre of Belgium, the Silver Medal of the Crown of Italy, the Silver Cross of the Italian Order of St. Laurance, two Russian Orders of St. Anne and one of St. Stanislaus, the Serbian Order of the White Eagle, and the King of Serbia's Gold Medal.

In addition civil recognition for war services has been gained in at least 38 cases.

I have long felt that should it be my lot to occupy the Presidential Chair in this notable year of our existence, I should like in some way personally to record this fact, and to acknowledge the great honour you have done me in placing me here; and in existing circumstances I do not think that I could carry out this wish more appropriately than by presenting to the Institution a permanent record of those members who have died for their country as some slight recognition of the honour in which we shall always hold them. If, therefore, you will allow me to do so, I propose to present to the members a Roll of Honour to be erected in this building.

The Council have kindly expressed their approval of this proposal, and I hope it will equally meet with yours. There can, I am sure, be no difference of opinion as to the deserving nature of such a memorial, but it is just possible that some of you may think that such a record should be set up by the Institution itself rather than by an individual. Should this view be held, I shall quite understand the feeling giving rise to it, and I sincerely hope that you will not hesitate on any personal grounds to express that opinion should it exist.

In conclusion I have only to thank you for bearing with me so patiently, and again to thank you for having elected me your president in this important year of our existence.

Mr. P. McHugh, Tuam, has secured the contract for a new stone cloister at Tuam Cathedral Close. Mr. R. M. Butler is the architect. The cloister is about 150 feet long, divided into an arcade of fifteen bays.

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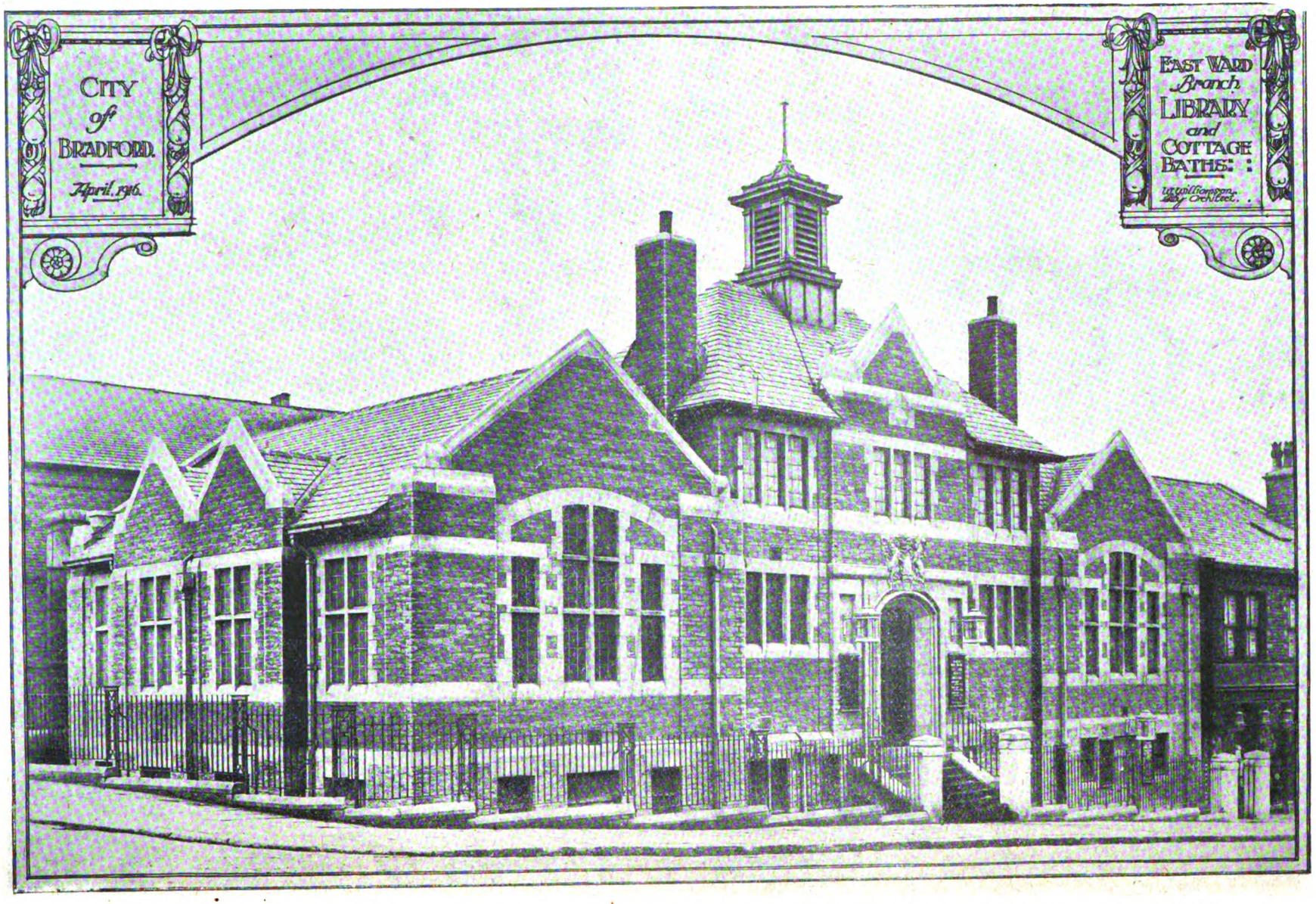

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Mr. W. WILLIAMSON, Licentiate R.I.B.A., City Architect.

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"GREYFRIARS," CHURT, SURREY : SOUTH VIEW.
Mr. E. Turner-Powell, F.R.I.B.A., Architect.

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"GREYFRIARS," CHURT, SURREY: N.W. VIEW.
Mr. E. TURNER-POWELL, F.R.I.B.A., Architect.

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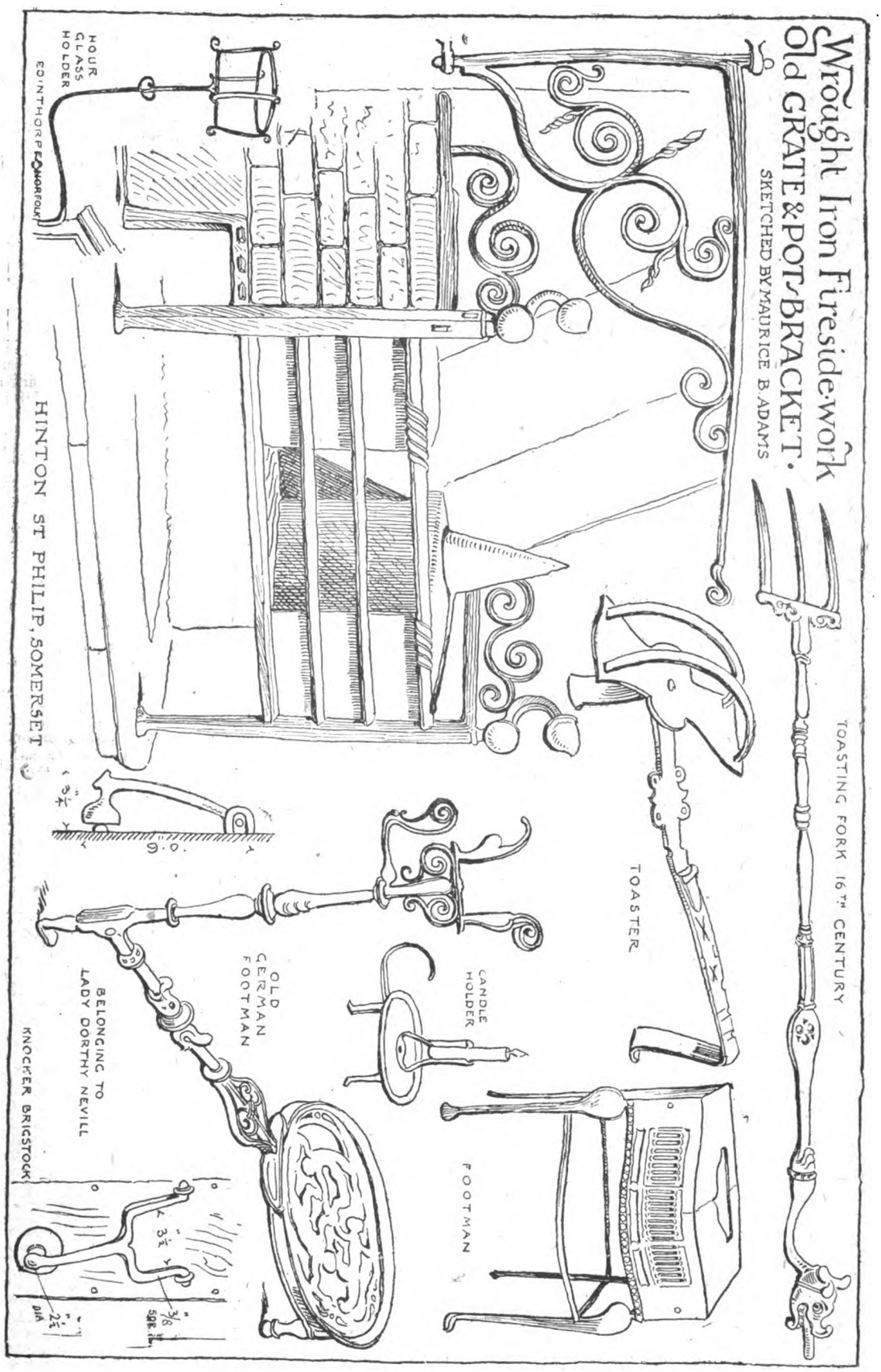

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Building Intelligence.

CALCUTTA.—A new police office at Calcutta, which is not yet fully occupied, has been designed by Mr. C. A. Crouch, consulting architect to the Government of Bengal, and built by Mr. J. C. Banerjee, contractor, of Calcutta, at a cost of about three lakhs of rupees. It is of the Italian Renaissance style, adapted to suit local conditions. The shell-work is of bricks and Porbandar stone. The floors and roofs are reinforced concrete. There are turrets at four corners of the building. In the centre of the frontage is a pediment containing a coat of arms, above which is the flagstaff. The building is about 73 ft. in height, and the total floor area is about 10,000 square feet.

THE "SCHNELL" METHOD OF BUILDING CONSTRUCTION.

About nine years ago the firm Janesch and Schnell introduced the "Schnell" system of building construction, which is patented in Austria, Germany, etc. The first important buildings were constructed in Bosnia, and the special features of the invention are the employment of hard and perfectly watertight cement blocks for the external face of the walls, with a lining of porous blocks inside, and air spaces between. The object is to avoid the trouble of damp walls which has been experienced with the use of hollow concrete blocks, and also to effect a considerable saving over brick walls both in cost and in consumption of fuel for brick burning. Special blocks for quoins and through connectors are used to effect proper bonding.

The author then quotes the comparative costs of building by the new method and the old, which were found in the construction of new official quarters at Sarajevo. He estimates that about one-third of the fuel was saved which would have been employed in burning the bricks and lime for an ordinary building. The relative prices in 1916 were for the "Schnell" type of hollow walls, Kr. 24.75 (20s. 9d.) and for ordinary brick walls Kr.34.90 (29s. 1d.) per cubic metre, showing a saving of 40 per cent. in favour of the "Schnell" system. With regard to fuel, the price of which has been constantly rising, the author assumes the annual production of bricks in Austria as 2,000 millions per annum, corresponding to 7,000,000 cubic metres of walling, which at the reduced cost of Kr.10 shown above would show a total saving of Kr. 70,000,000. He also shows that the saving of fuel would amount to 28,000 wagonloads of coal; he claims, moreover, that the loss of heat through the "Schnell" walls is so much less than that through solid brick walls that two-thirds of the fuel for heating a given building could be saved. A photograph of 6 thermometers is reproduced in the text. Two of these came from an ordinary building and were covered with mould, while the other four came from a "Schnell" building and are dry, clean and free from mould. (*Beton und Eisen*, October 5, 1918

Mr. W. J. Steele, city engineer of Newcastle-upon-Tyne, has had his salary increased to £1,300 a year.

Mr. C. R. Ashbee. F.R.I.B.A., has been appointed Civic Adviser to the City of Jerusalem. He returns to Palestine in January to take up his duties.

Mr. John Slater (architect and surveyor to the Berners Estate) gave a lantern lecture on "Old Marylebone" at a meeting of the London and Middlesex Archæological Society on Wednesday last at the Bishopsgate Institute. Col. Pearson presided, and incidentally stated that the society met at Marylebone so long ago as 1859.

Colonel Longdin, surveyor to the Penge Urban District Council, received a warm welcome from the members at the last meeting of the council on his return from active service. The Chairman (Captain Marr) said they congratulated Colonel Longdin, in the name of the whole district, upon his accomplishments in France and Italy in connection with road repair and road making. Captain Marr added that in Italy the authorities were so satisfied with Colonel Longdin's work that they named an avenue after him.

Our Office Table.

At the request of the Austrian Government the Austrian Society of Engineers and Architects has drawn up proposals for the increase of the permissible stresses in iron-work used for various structural purposes. These increases have been rendered possible owing to increased improvement in certain qualities of ingot iron and in structural methods. Careful attention has been paid in drawing up the suggestions to the nature of loads, stresses, etc., in buildings and bridges used for different purposes. Tables and a curve are given showing the increased limits allowed.—(*Zeitschrift des Oesterr. Ingenieur- und Architekten-Vereines*, September 27, 1918.)

The directorate of the Wurtemburg railways has both before and during the war carried out a considerable number of important works in concrete. For various reasons the details of construction and reinforcement cannot be published at present, but this article illustrates and describes several important bridges. The first is a bridge passing over a river, and a railway which runs parallel to the river at a level well above high-water mark. The portion over the river comprises three arched spans, while that over the railway comprises three bays with girders and it was the latter which determined the level of the whole bridge. An attractive feature is produced by a circular buttress surmounted by a shelter formed with pillars and a vaulted roof over the top landing of a flight of steps from the towpath below. The piers of the bridge are also of a much more pleasing form than those usually seen in such structures. The æsthetic treatment is due to the fact that a competent architect worked in conjunction with the engineer. Another example is that of a wide bridge over a public road. —(*Beton und Eisen*, October 5, 1918.)

The Minister of Munitions gives notice that all uncompleted contracts for the Admiralty, War Office, and Ministry of Munitions which have been placed in classes A or B, including the various grades thereof, P 1, P 2, P 3, P 4, P 5, P 6, under the Order as to Priority of March 8, 1917, need no longer be given the priority attaching to them under the Order, except in cases where the contractor is notified in writing or by official notice in the Press that a particular classification is still required to be given to any particular contract. Contractors must notify the Ordering Departments of the Admiralty, War Office, or Ministry of Munitions responsible for the contracts in question, of any modification of the original date of completion resulting frofm this relaxation of the Order as to Priority.

An addition to the portion of the British Museum open to the public has been made by the reopening of the Assyrian Transept, containing the colossal human-headed bulls and lions from Nineveh. The following galleries are now open from 10 to 1 and from 2 to 5:—The Entrance Hall, Grenville Room, First, Second, and Third Græco-Roman Rooms, Archaic Room, Ephesus Room, Elgin Room, and Assyrian Transept. The Trustees hope to have other galleries open before Christmas.

At the Chester Consistory Court last week, the chancellor granted several applications to place memorials to fallen officers in Cheshire churches. Two tablets are to be placed in the Coddington Church as memorials to Captain Hugh Aldersley, Cheshire Yeomanry, who was killed in Palestine, and to his brother, who was killed in action in France. The other memorials were a tablet in the Latchford Church in memory of Lieutenant-Colonel Egerton Fairclough, 4th South Lancashires; a tablet in the Grapenhall Church to the memory of Lieutenant John Lancelot Smith, 4th Lancashires; an oak reredos in the Nantwich Church in memory of Lieutenant George Winfred Harvey, M.C., 378th Battery, R.F.A., and a stained-glass window and a marble tablet in St. Barnabas's Church, Rock Ferry, as a memorial of men who were formerly members of the congregation who have fallen in the war. The vicar of Thornton Hough was given permission to substitute stained-glass for plain glass in a window of the church as a memorial to Thomas Brittain Forwood, J.P., Thornton Manor, and his eldest son, the Right Hon. Sir Arthur Forwood, Bart., M.P.

Professor C. V. Boys's heat distributor and coal saver, which we illustrated and described on p. 364 of our issue of November 27, has been carefully tested by the officials of H.M. Office of Works at 29, Abingdon Street, in two similar rooms and similar grates. An equal amount of coal was used in each, and temperature accurately recorded over a series of days. An increase of 3½ times resulted in the temperature of the room in which the Boys apparatus was applied to the grate over that of the increase of temperature in the other room. The most striking difference, however, was that in the former the air of the entire room to its remotest corners was warmed. As result, H.M. Office of Works has placed a large order for Professor Boys's heat distributors, which are to be fitted to the open grates in big Government offices, in many of which the occupants now suffer from cold owing to the restricted supply of coal. The two cylinders have been nicknamed "the heavenly twins," which give great comfort wherever they have been installed, particularly in the large smoking-rooms of clubs such as the National Liberal. A pair of twins are installed at the Prime Minister's, 10, Downing Street, where they were inspected by Marshal Foch when in London.

The world's first glass boat house is being built for Mr. Lee M. Rumsey's winter home at Alton Beach, Miami, Florida. The structure is of pleasing line, with curved eaves, and with the roof and sides constructed of glass there is little chance of mildew. It can be washed down with a hose from top to bottom. There is not a dark spot in the whole structure. The supporting framework is of cast iron and steel, heavily galvanised. The glass used in glazing is ground, which softens the direct rays of the sun, while giving the maximum amount of light. The double doors are of wood, with an open lattice pattern that insures good air circulation. In designing the structure the architects aimed to secure conditions approaching a boat at anchor, with a suitable covering to shield it from the weather. The foundation is of concrete. A toilet and storage closet are provided at one end.

The King was represented by Vice-Admiral Henry Campbell, Queen Alexandra by Colonel Sir H. Streatfeild, and Princess Louise by Colonel Vernor Chater at a service held on Saturday last at St. James's Church, Piccadilly, in memory of British artists and art students who have fallen in the war. The Royal Academy was represented by Sir Edward Poynter and the following members of the Council:—Mr. A. C. Gow, R.A., Sir Aston Webb, R.A. (with Lady Webb), Mr. C. Sims, R.A., Mr. Frank Dicksee, R.A., Mr. H. Woods, R.A., Sir W. G. John, R.A., Sir E. George, R.A., Sir G. Frampton, R.A., Mr. A. Hacker, Sir F. Short, R.A., and Mr. W. R. M. Lamb, the secretary. The congregation included many other members of the Royal Academy and many past and present students of the Royal Academy Schools.

The Public Control Committee of the London County Council, in a report dealing with the quality of gas supplied during the war, state:—"With the cessation of hostilities gas companies are being relieved of the requirement to debenzolise the gas for war purposes. We are accordingly considering what steps can be taken, consistent with the national interest, to secure for the benefit of consumers a return to pre-war conditions as regards the heating value of the gas supplied by the large London gas companies."

It is worth noting that, though the Royal Academy has been in existence for a century and a half, Sir Edward Poynter, who has just resigned the presidency, was only the ninth holder of the office. The first president, of course, was Sir Joshua Reynolds, who was followed by Benjamin West, Sir Thomas Lawrence, Sir M. A. Shee, Sir Charles Eastlake.

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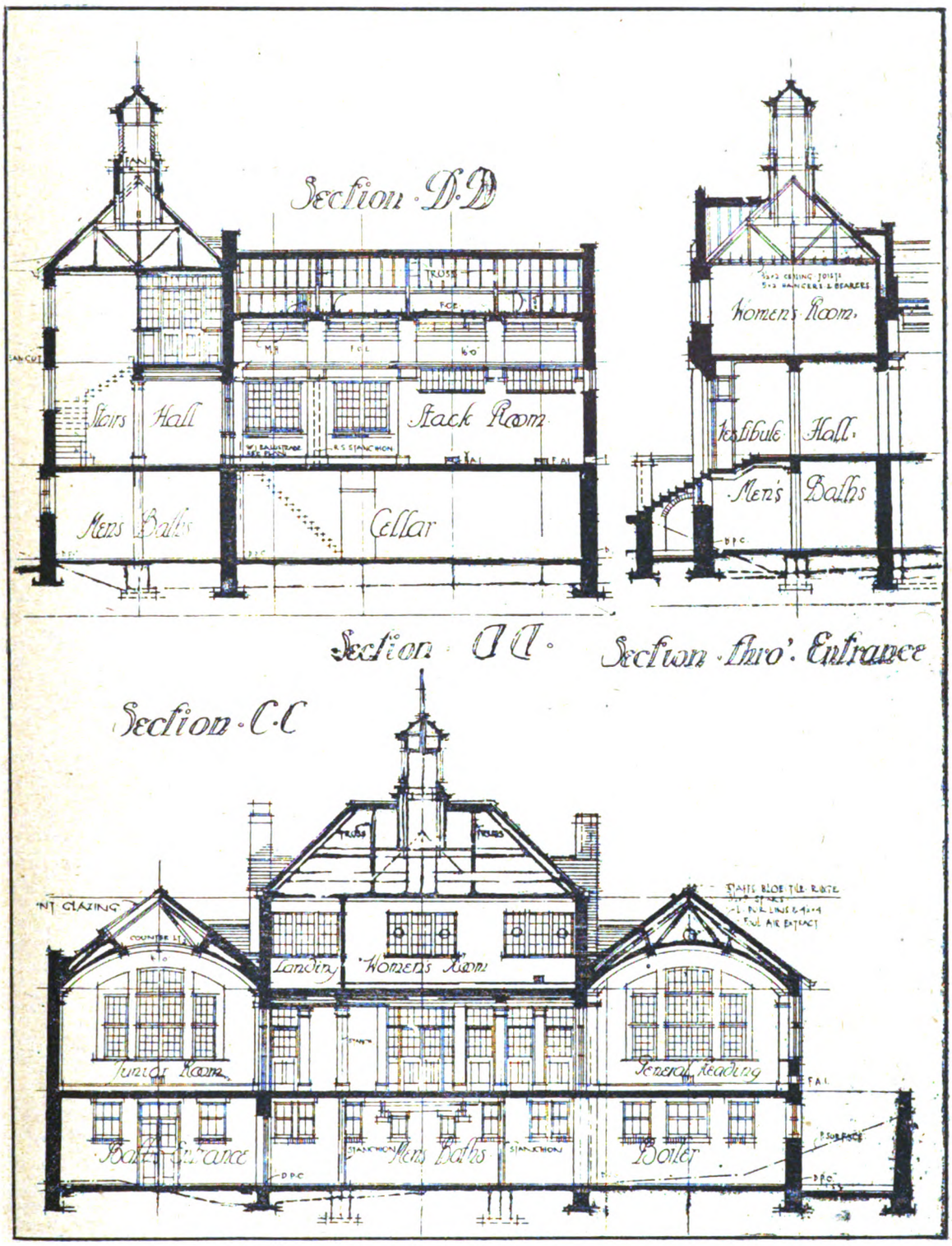

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Mr. W. WILLIAMSON, Licentiate R.I.B.A., Architect.

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Sir Francis Grant, Lord Leighton, and Sir John Millais. Sir Edward succeeded the last named in 1896.

Mr. T. W. Mawson, city planning expert to the Greek Government, explained last Friday night at King's College, Strand, his proposals for the planning and reconstruction of Athens. Mr. Mawson showed, by means of slides, his designs for a new central railway station, Houses of Parliament, artizans' houses, workshops, boulevards, and other important work required by the rapid growth of the Greek capital. M. Gennadius, late Greek Minister, remarked that the plans possessed the great merit of preserving all the ancient monuments. The scheme was so vast that many of them could only contemplate it as something to be accomplished after they had gone, but it was a pleasant and agreeable prospect for them to know that Athens would one day be so magnificent and beautiful.

PROFESSIONAL AND TRADE SOCIETIES.

THE PAINT AND VARNISH SOCIETY.—A meeting of the above society will be held at St. Bride's Institute, Bride Lane, Ludgate Circus, E.C., on Thursday, December 19, 1918, at 7.30 p.m. prompt, when a paper will be read by Mr. Archibald Vickers, entitled: "The Varnish and Prepared Paint Trade and its Future: Some Observations and Suggestions." Members of the society are requested to kindly extend invitations to any of their friends or representatives likely to be interested.

QUEEN MARGARET AS CHURCH RESTORER.—Mr. Macgregor Chalmers lectured on 7th inst. to the members of the Ecclesiological Society in Edinburgh on his recent researches at the abbeys of Iona and Dunfermline and at the Chapel in Edinburgh Castle. At Iona, said the lecturer, Queen Margaret built a new church upon the site of earlier buildings which had been destroyed. The church was a simple oblong structure, with two side chambers towards the east end, and was manifestly a reproduction by a Celtic architect of the plan of St. Columba's early church. At Dunfermline Queen Margaret added a tower to the west and a new church and apse to the east of the ancient church, in which she had been married to King Malcolm, and which was preserved as part of the extended building. The foundations of the eleventh century building were found under the floor of the Norman nave. At Edinburgh Castle, Queen Margaret restored the upper part of the walls of an ancient chapel which had fallen into decay. Under the floor of the chapel—only a small opening has as yet been made—was found the débris of a still more ancient building, and amongst this débris was unearthed a fragment of link, which, when compared with other examples from Newstead and Caister, near Yarmouth, may be claimed as of Roman manufacture.

TO ARMS!

ROYAL ENGINEERS (VOLS.), LONDON ARMY TROOPS COMPANIES.

Headquarters: Balderton Street, Oxford Street, W.1.

Regimental Orders, No. 52, by Lt.-Col. C. B. Clay, V.D., Commanding.

MONDAY, DEC. 23, to SATURDAY, DEC. 28.—Headquarters closed.

C. HIGGINS, Capt. R.E., Adjutant.

The Burnley Town Council have decided to apply for a provisional order to acquire land for new gasworks and a gasometer to hold three million cubic feet of gas.

Mr. Sheriff Banister Fletcher, at the quarterly communion of the Grand Lodge of England, nominated H.R.H. the Duke of Connaught for re-election as Most Worshipful Grand Master.

The Galashiels Town Council have approved a scheme to extend the Municipal Buildings as a memorial to Galashiels men who have fallen in the war. It is estimated that the cost of the extension will be more than £15,000, and towards this a number of handsome contributions have been promised.

OGILVIE & CO. Telephone: DALSTON 1888
Many years connected with the late firm of W. H. LASCELLES & CO. of Bunhill Row.
Mildmay Avenue, ISLINGTON, N.
EXPERTS in HIGH-CLASS JOINERY.
ALTERATIONS & DECORATIONS. ESTIMATES FREE.

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Olivers'
Seasoned
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APPLY TO—
WM. OLIVER & SONS, Ltd.,
120, Bunhill Row, London, E.C.

TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

ILFORD.—For granite, for the Ilford Urban District Council:—

W. Griffiths and Sons, 1½ in. Guernsey granite, £1 3s. per ton, and 1½ in. Griff granite, 16s. 8d. per ton (accepted).

MAGHERAFELT (CO. DERRY).—For repairs to labourers' cottages, for the rural district council:—

Thomas Lennox, Knockcloughrim, No. 1 contract, £244; Daniel Charters, Bellaghy, No. 6 contract, £231. Accepted.

TADCASTER.—For work and materials required in the excavation and laying of about 160 yards of 9 in. earthenware pipe sewer, manholes, etc., at Askham Bryan, for the Tadcaster Rural District Council. Mr. H. C. Wood, sanitary surveyor:—

Parker and Sharp, York	£155 10 0
Birch, W., and Sons, Ltd., York	119 5 0
Emery and Co., Birmingham ..	113 13 0
Martin, C., York	110 0 0
Deeley, S., Royston	105 0 0
Walker, G., and Sons, York (accepted)	104 10 0

WALTHAMSTOW.—For two sets of apparatus for dealing with tube corrosion, for the electricity committee:—

Cumberland Engineering Co., London, £143 each. Accepted.

LIST OF TENDERS OPEN.

COMPETITIONS.

Jan. 1, 1919.—Designs for Housing Scheme at Birmingham. Premiums of £150, £100, and £50. Town Clerk, Council House, Birmingham. (See advt.)

ARCHITECTS FOR HOUSING.

Dec. 31.—Welsh architects desirous of being included in the select list of architects to compete for the new Science Buildings in connection with the Heroes' Memorial are invited to send their names to Mr. John Edward Lloyd, Secretary and Registrar of the University College of North Wales, Bangor. (See advt.)

Jan. 6.—Architect wanted by the Urban District Council of Aberdare to give whole time to Housing Scheme. Salary, £450 per annum. Applications to Mr. W. R. Morgan, Town Hall, Aberdare. (See advt.)

BUILDINGS.

Dec. 20.—All work, except masons', required in the reinstatement after fire and the erection of an additional storey to Melbourne Mills, Dalton Lane, Keighley.—For Mr. Robert Clough.—Drawings and bills of quantities from Messrs. Moore and Crabtree, architects, Station Buildings, Keighley.

Dec. 31.—Completion of 14 houses (exclusive of street works) at Gellifaeleg, Penydarron, and Merthyr Tydfil.—For the Corporation.—Particulars from the borough architect, Town Hall, Merthyr Tydfil. Tenders, endorsed "Gellifaeleg Houses," to T. A. Rees, Town Clerk.

PAINTING.

No Date.—Tenders are invited for painting the exterior of Bethnal Green Military Hospital, Cambridge Heath, E.2.—For the Bethnal Green Board of Guardians.—Quantities and forms of tender from Messrs. Holman and Goodrham, 6, King's Bench Walk, E.C., by forwarding to them a deposit of £10 in Bank of England notes, which will be returned upon receipt of a bona fide tender. The latest date and time by which sealed tenders must be received by G. F. Jones, Clerk to the Guardians, Administrative Offices, Bishop's Road, Bethnal Green, E.2, will be notified.

SANITARY.

Jan. 2.—Alterations to and repairs, renewals, and replacements of the drains on workhouse premises, in accordance with plans and specifications prepared by Mr. J. Morgan, surveyor and waterworks engineer, which may be seen at the Union Offices, Monk Street, Abergavenny.—For the Guardians.—Tenders to W. H. P. Scanlon, Clerk, Union Offices, Monk Street, Abergavenny.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the abovementioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

TO CORRESPONDENTS.

CHRISTMAS.

In order to complete publication before Christmas Day, and enable readers to get their copies at the usual time, our issue of that week will be published at 2 a.m. on the morning of Tuesday, December 24. The latest time, therefore, for the receipt of advertisements will be 1 p.m. on Monday, December 23.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

It is particularly requested that all drawings and all communications respecting illustrations or literary matter, books for review, etc., should be addressed to the Editor of the BUILDING NEWS, Effingham House, 1, Arundel Street, Strand, W.C.2, and not to members of the staff by name. Delay is not infrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

When favouring us with drawings or photographs, architects are asked kindly to state how long the building has been erected. It does neither them nor us much good to illustrate buildings which have been some time executed, except under special circumstances.

*****Drawings of selected competition designs, important public and private buildings, details of old and new work, and good sketches are always welcome, and for such no charge is made for insertion. Of more commonplace subjects, small churches, chapels, houses, etc.—we have usually far more sent than we can insert, but are glad to do so when space permits, on mutually advantageous terms, which may be ascertained on application.**

TO ALL READERS AND ADVERTISERS.—The prospect of early peace encourages the hope that at no distant date the restrictions on newspapers of the past four years which have so harassed all of us will be removed, and we shall return to normal conditions of production. But not, we fear, at so early a period as we could wish. Paper is still rising in cost, and the price for our December deliveries is the highest yet paid. Printing and engraving are still double war prices. We are completely in the dark as to the Paper Controller's intentions with regard to next year's supply, which limited us to half the quantity used in 1917. So that the already gratifying return of readers as subscribers who have missed their paper so long, and of advertisers who are naturally anxious to re-occupy space we have not been able to give them, is not altogether without embarrassment. Old readers and constant advertisers must, of course, be first, as far as possible, and we respectfully ask all readers who usually renew their subscriptions about the end of the year, and all advertisers whose contracts with us fall out about the same time, to favour us with their instructions *as soon as possible*. Other readers and advertisers whose commands may reach us too late are assured we shall only too gladly welcome their return when our circulation and our space are once again equal to the normal demands of pre-war days.

ADVERTISEMENT CHARGES.

SITUATIONS VACANT.

The charge for advertisements for "Situations Vacant" is Two Shillings and Sixpence for Twenty-four Words, and Sixpence for every Eight Words after. *All Situation Advertisements must be prepaid.*

SITUATIONS WANTED AND PARTNERSHIPS.

The charge for advertisements for "Situations Wanted" and "Partnerships" is One Shilling for Twenty-four Words, and Sixpence for every Eight Words after.

All Situation and Partnership Advertisements must be prepaid.

RECEIVED.—A., Ltd.—K. and Co., Ltd.—Capt. P.—H. and Co.—H. P.—L. P. E.—B. S. Co., Ltd.—Domus.

M. G.—No.

T. R. S.—Please send.

P. W. F.—That was his last address.

The Newton Abbot U.D.C. have agreed to appoint Mr. J. Beare, of Newton, as architect for their housing scheme. Compulsory powers are to be applied for in connection with the purchase of land at Buckland Brake.

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December 25, 1918. Volume CXV.—No. 3338.

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

Effingham House. Strand, W.C.2

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OUR ILLUSTRATIONS.

"Peace" and "Justice." Stained glass window for the Peace Palace at the Hague. Cartoon of the central window. Designed by Mr. Henry A. Payne. Royal Academy Exhibition, 1918.

The Residential Building, Open-air School, Daisy Hill, Bradford. Plans, elevations, and sections. Mr. W. Williamson, Licentiate R.I.B.A., Architect.

Old English Headstones in Churchyards: Chipping Warden and Compton Wynyates, Warwickshire; also Newton-in-the-Willows, Northamptonshire. Sketched by Mr. Maurice B. Adams, F.R.I.B.A.

Government Housing Scheme, Well Hall, Woolwich. Two blocks of eight and ten cottages, built in rows. Plans and elevations. Sir Frank Baines, C.B.E., M.V.O., H.M. Office of Works, Architect.

Currente Calamo.

Once again it is possible to wish all a Merry Christmas and a Happy New Year. Few of us, it is true, will enjoy it as in pre-war days, surrounded by those for whom the feast is most worth keeping; but at least we may sit down to-day to such cheer as we are as yet allowed in thankfulness that the feast is not likely to be marred by air raids at home or bad news of those dear to us, who, though still keeping watch and ward on land and sea, are not daily facing death, or worse, for us all, and with something like confidence that next year they too will join us, and that by then Peace will have begun to bear the fruits of victory and to efface the scars of the wounds still open in many hearts. And in such faith and with such hope we are confident no reminder of ours is needed that the privilege of all to-day is to make it a happy one for those to whom we owe a life-long debt of gratitude for the heroism and self-sacrifice which has saved the Empire and defeated the barbarian conspiracy against freedom and civilisation. Gratitude, by the way, which, after all, is only a lively sense of the favours to come we may all need at their hands if the New Year is to see us free from placemongers, profiteers, faddists, pacifists, Bolshevists, and other queer cattle still with us, and eager to hinder the return of national and individual welfare we all trust it may bring us.

Our very brief reference on page 399 to the Minister of Munition's cryptic and surprising attempt to "encourage" brick-makers (which only reached us at the moment), probably sufficiently indicated what we thought of it, but, as is pointed out by "A Brick Manufacturer" in the *Times* of Friday last, it will have the opposite effect. As he says: "On most commodities the maximum prices are fixed to apply all over the country. The brick price is a fixed one, in some cases for each particular area, and in others for each individual firm. One firm I know in Cumberland, the fixed price is 45s. per 1,000, and another in Lancashire 60s., and some higher. But why the difference? In my own case, my neighbour, not many yards away, has a fixed price at 2s. 6d. per 1,000 higher than my own, and my brick is a better one. The price is apparently fixed on cost sheet sent to the Controller, thereby offering a reward for the greatest skill at camouflage, or penalising those firms whose plant is more economical. To encourage brick making it will take more than the notice in question, when you ask the latest prices for new or modern brick-making machines and up-to-date kilns to be free of the fuel difficulty. The brick trade will be better without control, or at least only such control to ensure every works giving the Government a fair proportion of their output at a controlled price for housing, and leaving firms free to do as other trades and make the best of their way before the lean years come again. Reduced railway rates to industrial areas would be some little encouragement, but a declaration as to what is going to happen at the end of the six months would do more." But, naturally enough, the Minister of Munition's "experts" know nothing about the matter at issue, and the result is another addition to the caprices of Control!

The *American Architect* suggests, first, the federation of all American architectural societies into one representative body, which shall stand for architecture wherever it is practised in the United States, and the affiliation thereof with similar organisations in other countries. "Our own forces, with those of our Allies," continues our contemporary, "have shot away, broken down all national boundaries. The world to-day comes nearer a great federation of men striving for a common purpose than ever before. Why not, then, an international convention of the profession, participated in by all the representative architectural organisations of the Allied countries? Can anyone conceive a better method of bringing home to all the world the true meaning of the profession of architecture? Let us consider a minute. Tons of paper have been covered in describing the vandalism of the German army and deploring the destruction of monumental buildings in France and Belgium. No one tries to minimise the loss; everyone is earnest in protest. Is not this loss one of architecture? Does the average reader think of it as architecture? A conference, such as is here suggested, would result in widespread appreciation of architecture. No one would thereafter dispute its value as a great educational meeting. Let us arrange for an Allied conference of architects as quickly as we can." Let us by all means, say we, and let it be followed by yearly gatherings in the capitals of all countries successively, at which the principles and practice of our art may be discussed in similar fraternal fashion to that which prevails in regard to Science at the meetings of the British Association.

City Engineer Doane, of Halifax, Canada, has made a recommendation, which has been unanimously approved by the city council, that an amendment to the Building Act be sought at the next session of the Legislature, providing that the building inspector shall have the power to reject the design of any building submitted by a prospective builder, and that he shall have the power to compel such builder to substitute therefore either a design selected from those on file in the building inspector's office, or one prepared by himself as the building inspector might approve. His further suggestion that copies of the designs used by the Halifax Relief Commission be secured, and kept on file by the city for the use of builders, also received full approval. In this connection, his report stated: "Intelligent designing does not necessarily mean any considerable increase in cost, while it means an immense increase in the satisfaction to the purchaser, and a corresponding improvement in the general appearance of the city. If the building department of the city had some discretionary power so that they could prevent the erection of ugly structures immediately adjoining, or in the vicinity of handsome and pretentious structures, it would be a desirable step in advance. The Halifax Relief Commission has a varied assortment of designs, prepared by architects of standing, all pleasing in appearance and many of them comparatively inexpensive. I am satisfied that I could obtain a copy of these designs on application; some of them have been filed already in this office. The great majority of the house builders with limited means would be only too pleased to get the assistance of this department, if it did not add very much to the cost of their construction; and even though the city had to pay for the designs I think it would be money well spent if a large number of designs were on file in this office for selection by prospective builders."

The sixth issue of "Floor Slab Reinforcement," issued by the British Rein-

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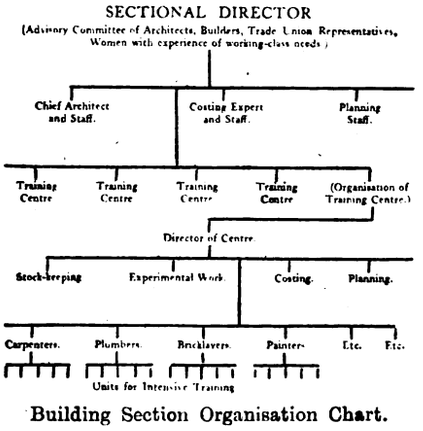
forced Concrete, Limited, of 1, Dickinson Street, Manchester, will be read with interest by all who send for it. It embraces a series of very practical articles on Housing and Roads, Roofs, and Reinforced Concrete generally. The last article, by Mr. J. Totty, the architect of the Rotherham Glass Works, shows most usefully and suggestively the moulding room of that building, with its arched reinforced concrete roof principals, 61 ft. span, as erected from his designs. Mr. Totty's recommendation of the B.R.C. system of reinforced concrete has certainly been abundantly justified in this case. Although the building is subjected to intense heat from the large twelve-pot furnace situated in the middle of the shop and the two 60-ft. long annealing lears or ovens which run down either side of the building, there are no flaws in the concrete. Mr. Totty tells us he has also used B.R.C. fabric with excellent results for coal bunkers and for floors and roofs where the weight has been carried on steel joists and girders, and also to stiffen ground and basement floor concrete and prevent the cracking which sometimes occurs from the contraction and expansion of the ground on which the floor is laid.

The restrictions on building under orders of the Ministry of Munitions, though inevitable during the war, seem to have caused a good deal of needless confusion in their application. By what is known as Regulation 8E, no person may, without a licence, commence or carry on any building unless "the total cost of the whole completed work in contemplation does not exceed £500." In the recent case of "The Director of Public Prosecutions v. Solomon Ford" the defendant was summoned for breach of this order by having done building work between February 15 and July 31, 1917, without a licence, upon a certain Manor House. The Minister's General Order had been made on July 14, 1916, and on August 21, 1916, he had granted defendant a licence to build this house at an approximate cost of £500. Between that date and February 15, 1917, the builder had exceeded his licence by doing work at a cost of about £1,000. But, during the period for which he was charged—*i.e.*, from February 15 to July 31, 1917—his building work only came to £364, which was within the limit of £500 given by the licence. The Justices, holding these to be the material dates, and finding that, in that time, defendant had only expended £364, dismissed the information. On appeal to the High Court it was ruled that the magistrates had been wrong in thinking that, as a licence had been granted to the defendant, they need not take into account the work done before he obtained the licence. The Court, therefore, now remitted the case to the Justices with a direction to convict the defendant. It was also held that the Regulation and the Order were not *ultra vires*, as argued for the defendant. All the same, there seems to have been a muddle somewhere in making out the information and the charge.

THE SHORTAGE OF LABOUR IN THE BUILDING TRADES, AND A REMEDY.

It is as plain as a pikestaff to every architect and builder that the most serious hindrance to the renewal of building operations next to the "encouragement" thereof by the blunders of the Controllers and their fellow-muddlers, who are still busy regulating the prices of raw material, will be the already evident determination to maintain a monopoly of skilled labour at war-time wages, and the continued scanty supply thereof, and, in addition, even of the sort which is the despair of every employer. That the public will resent this is certain, and one result will be that better-class work will be indefinitely postponed, at any rate till complete demobilisation liberates the many thousands of men who are more or less wasting their time and the nation's money in picking up pieces of paper in the barrack-yards and camp precincts. It is equally apparent that demobilisation will send back into civil life thousands and thousands of young men taken from labour just at the time when their training in



Building Section Organisation Chart.

their work had about sufficiently advanced to induce them to cultivate a more hearty desire to complete it. We shall probably, therefore, have, on the one hand, altogether insufficient labour in the many trades where it is badly needed, and, on the other, swarms of unwilling idlers drifting into pauperism.

We have no claim to speak for those outside our own industries, but so far we have seen no remedy better worth a trial as regards our own than that set forth by Mr. Douglas Cockerell, M.B.E., in a business-like pamphlet entitled "A National Scheme for Vocational Training for Able-bodied Sailors and Soldiers," published at sixpence by Mr. John Hogg, 13, Paternoster Row, E.C.4, which we advise every reader to get and study.

We have all seen during the war that it has been possible by short periods of intensive training to transform unskilled workers into useful producers within narrow limits; and we all know how ridiculous it is to suppose that any great proportion of the demobilised sailors or soldiers from twenty-three to twenty-five years of age will submit to serve long terms of apprenticeship, or to long terms of school, or college, or technical institute training, even if we were able to give it them and they could be persuaded to submit to it in the absence of means of support, which many will not have. There is in our own opinion only one other practical alternative, and that is the recognition of the fact that to-day industry is divided into small portions, so that in most cases workmen are kept all their lives at some small portion of a trade. Beyond all doubt most regrettably, as we have often enough deplored; but we believe, regarded merely as a means of meeting present urgencies, this very fact will help us over the stile, and may ultimately help to revive real apprenticeship of the old kind, when the apprentice was really taught his craft by a master thereof and not merely run through the shops of a concern whose directors he never saw, and brought into daily contact with men whom in his time and generation he had reasonable hopes of ranking.

In the great majority of cases six months would probably be the shortest time which unskilled men could be reasonably expected to devote to training. We are left, therefore, to choose between turning out men with the general but unmarketable knowledge of a trade, or with a marketable knowledge of, perhaps, a single operation. If all soldiers or sailors were given an opportunity of receiving a six months' or even a three months' course of training before demobilisation we believe a sufficient number would take it to benefit themselves and the country. The scheme would be costly, but certainly not more costly than allowing the great mass of the men to leave the Army untrained, and the results of material used would be recovered from the buyers.

The one indispensable guarantee of success would be the capable preliminary organisation of every detail. The needs of every large industry will have to be investigated and an estimate arrived at of the probable labour shortage in each trade. Next, a detailed plan for meeting the probable requirements of the industry. Then the co-operation of the employers' organisations and the men's trade unions should be secured, if possible, and a joint committee formed, with an educational expert as chairman.

Mr. Cockerell has selected our own trade as a workable example, because the present need for small houses is urgent, and because the scheme would provide its own accommodation and could very soon be put in operation at nearly any place in England or abroad. Moreover, the building trade, embracing as it does nearly all the domestic trades, offers a specially suitable field for intensive training for men of varying tastes and capabilities.

The diagram we reproduce shows at a glance the general outline of the scheme from the training side. The sectional committee would superintend its general scope. The chief architect, skilled in designing and building small houses, would prepare the plans and specifications. A costing expert would be responsible for the detailed costing of every item and the record of different designs and methods of work. The planning section would work in close touch with the costing section, and undertake the subdivision of work into training units and the arrangement in some detail of the proper sequence of work and the supervision of the work at each training centre. It might also arrange for the testing of labour-saving devices. The actual training centres would be in places where houses are urgently needed, and would mostly be where soldiers are stationed or near them. A responsible and capable director would generally manage the training centre on educational lines; the military authority would be responsible for housing, catering, and military discipline. A staff of expert tradesmen would act as teachers, and, in conjunction with the planning section, would divide each trade into training units; thus, for instance, the wood-working section might be divided into sections for doors, windows, floors, stairs, etc., and a man kept at work in one training unit till proficient, and so throughout the various trades.

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A group of teachers having been got together, Mr. Cockerell recommends that the first teaching group should actually build one or more houses, and that when built, either by teachers or pupils, a close study of the design and cost would suggest desirable modifications in the next group, and so not only train the soldiers but establish standards for small house building. To start the preliminary work all that would be needed would be land, building material, and tools. After six months' training a group of efficient pupils might be discharged from the Army and employed, as tradesmen, to build further groups of houses under the local centre's supervision, and paid on the basis of individual or collective capacity. Gradually, no doubt, arrangements could be made for the men to join the various trade unions, and so be absorbed into the ranks of skilled labour.

Some, no doubt, will criticise the scheme as being uneducational, as an educationist understands the word, and perhaps the criticism will not be unfair. But Mr. Cockerell urges, and with reason, that where training time is limited the scope of teaching must also be limited. And while the standard proposed is only a marketable one of skill within narrow limits, very few men could fail to acquire a fair general knowledge of the building trade as a whole in the keen educational atmosphere engendered in a properly organised training centre. If aeroplanes can be built by unskilled labour after a short training under the guidance of comparatively few skilled men, surely unskilled men can be trained to build small houses.

To us the scheme has one great recommendation: teachers and pupils would work together under local conditions with local materials, and anything like the horror of covering the country with uniform houses of fixed Government design would be avoided. The one thing needful, of course, will be good, genuine teaching. We believe with Mr. Cockerell that "bricks and mortar and elaborate equipment are not the vital factors in educational training. The vital factors are the teachers and the extent to which each educational problem has been studied." Non-recognition of that fact, as we and others have long ago shown, has resulted in the comparative failure of our schools of art. We do not want merely more teachers as the result of the scheme Mr. Cockerell suggests, but more craftsmen—even if only half-skilled—who will, we believe, if really efficiently trained, do more to solve the housing question, or, rather, the present phase of it, than all the talk of "experts" self-sufficient in everything but actual work.

It is stated that Colonel Ruston and Mr. G. R. Sharpley, two directors of Ruston and Hornsby, Limited, Lincoln, have acquired 225 acres of land at Boultham, and are developing a scheme for building 1,800 houses on garden suburb lines.

Sir Richard Glyn has decided to sell the outlying portions of his Dorsetshire estates, comprising about 5,000 acres, near Shaftesbury, next spring. They include the Manors of Cann, Melbury Abbas, Compton Abbas, and part of Fontmell Magna.

The Duke of Sutherland has decided to offer by auction next spring a portion of his Scottish estates on the east coast of the county of Sutherland, comprising the well-known moors and fishing of Cambusmore, Dornoch, Rovie, Lairg, and Shinness, extending to over 90,000 acres.

The priority of distribution of cement by the War Office by means of certificates is ended. Manufacturers and merchants are now at liberty to execute orders without certificates provided priority is accorded to Government orders. Export licences, however, remain in force as hitherto.

Our Illustrations.

"PEACE" AND "JUSTICE"—STAINED GLASS WINDOW FOR THE PEACE PALACE AT THE HAGUE.

A series comprising three groups of cartoons for windows of the Peace Palace built at the Hague filled three frames shown at the Royal Academy this year. We give those of the central window designs. The others will appear at an early date. The subjects of to-day's double page are "Peace" and "Justice." The armies and the navies of the world occupy the right and left panels, and are represented dedicating themselves to the ideals of "Peace" and "Justice" typified in the middle of the composition. In the upper lights are groups symbolic of the Nations living together in Peace under the influence of the New Civilization. These schemes were prepared before the war, now won, had begun. Mr. Henry A. Payne, of Amberly, Gloucestershire, the artist commissioned by the Government to make these designs, writing to us says probably if he took the matter up under present conditions the work would be indicative of the experience gained during the war. As it was, the subjects were necessarily handled otherwise.

OPEN-AIR SCHOOL, DAISY HILL, BRADFORD.

THE RESIDENTIAL BUILDING.

These premises will occupy the apex of the site on the highest part of the land. The two larger series of buildings forming the major part of this open-air educational centre for the city of Bradford were illustrated on December 11, 1918. Mr. W. Williamson, Licentiate R.I.B.A., the city architect, has designed the entire scheme. The residential block comprises a large central dining-hall for forty children, with the usual kitchen and other offices on the north side. Immediately adjoining the dining-hall east and west will be placed bedrooms and sitting-rooms for the officers, together with dormitories for twenty boys and twenty girls each, which will be under the direct supervision of the officers in charge. To the north of the dormitories, and in separate wings, will be the bathrooms, lavatories, lockers for clothes, linen, boot rooms, and other offices, the approach to which is from the corridor immediately outside the dormitories. The whole of this block is a one-storey building, with the exception of the small portion over the kitchen and scullery behind the dining-hall, which will be two storeys in height, on the first floor of which will be placed the bedrooms and bathroom for the kitchen staff. A separate sick block, consisting of two wards each for two beds, with central duty room, bathroom and other offices, is placed at the extreme north of the site, and is completely isolated from the rest of the buildings.

OLD ENGLISH HEADSTONES IN CHURCHYARDS.

These four examples for various counties are typical of the tombstones scattered more or less all over England. These probably were designed by traditionally trained local masons or by accomplished and travelled architects. We illustrate two instances from Compton Wynyates in Warwickshire and Newton-in-the-Willows, Northamptonshire, clearly belonging to the same school of surface ornamentation. The first-named is dated 1776 and the later one 1790. Of the more ordinary types a good example with a well-shaped head is supplied by to-day's sketch of the early dated stone from Chipping Warden, with its convex cartouche set about by an architectural treatment, pleasant enough in detail. It is dated 1711. The grave of George Carter in the Surrey Churchyard at Epsom, though of a later period, is of good design. Broadwater and Sompting in Sussex are rich in fine headstones, while the neighbouring churchyard at West Tarring, wide of Worthing, has a specially beautiful memorial of this class inscribed with the name of George Weller, who died in 1786. The surface enrichment is in the best taste of its period, very like Adam's work. Witney, in Oxfordshire, and Fairford, in Gloucestershire, also Godmanchester, in Huntingdonshire, ought not to be overlooked when suggestive specimens are sought. The last-named has a very fine stone to John Fox, 1748, by a capable craftsman. The smaller stone shown from Compton Wynyates takes the form of a cartouche panel, less refined than the other.

GOVERNMENT HOUSING SCHEME, WELL HALL, WOOLWICH.

These two sheets of working elevations and plans show some of the larger blocks of houses carried out at Woolwich for the Government by Sir Frank Baines, C.B.E., M.V.O., principal architect, H.M. Office of Works. In our issue of November 27 and December 4 some photographs and general drawings were given, and a descriptive article appeared in the earlier issue. The accompanying pages show groups of eight and ten cottages. The larger block has through ways, giving access to the rear premises; the baths in this row are in the sculleries. The other block supplies six parlour cottages, all of which have the bath on the upper floor. The two intermediate houses, where the break in frontages at front and rear occur, comprise a living room only with scullery attached including the bath. All the dwellings have three bedrooms.

COMPETITIONS.

PROPOSED CINEMA COMPETITION, GRANGE-OVER-SANDS.—Members of the Society of Architects are requested not to take part in this competition without first ascertaining from the secretary of the society that the conditions have been approved by the Council.

The Inverurie T.C. has resolved that an architect be consulted as to the selection of the sites and the plans for workmen's dwellings.

Mr. R. C. Gordon, architect, 395, Romford Road, Forest Gate, is the architect for a new warehouse to be erected in Graham Street, West Ham.

At a meeting of the Linlithgow County Council last week it was stated that the Admiralty will not proceed with their contemplated developments on the southern shore of the Firth of Forth, and that consequently the proposed erection of several hundred houses to constitute a new town, Port Edgar, will not take place. The county council have therefore cancelled a proposed recommendation to the Ministry of Reconstruction for the construction of a shore road from Bo'ness along the shores of the Forth to Port Edgar.

The medical officer of health and the sanitary inspector to the Wimborne and Cranbourne (Dorset) Rural District Council, in a report on the provision of fifty new cottages, state that they have selected sites on higher ground than the present villages with a view to encouraging the development of new villages on the hills to replace the old badly situated villages in the valleys. They also recommend the preparation of town-planning schemes for entirely new villages at Gussage St. Michael and Shapwick, both places being low-lying and damp.

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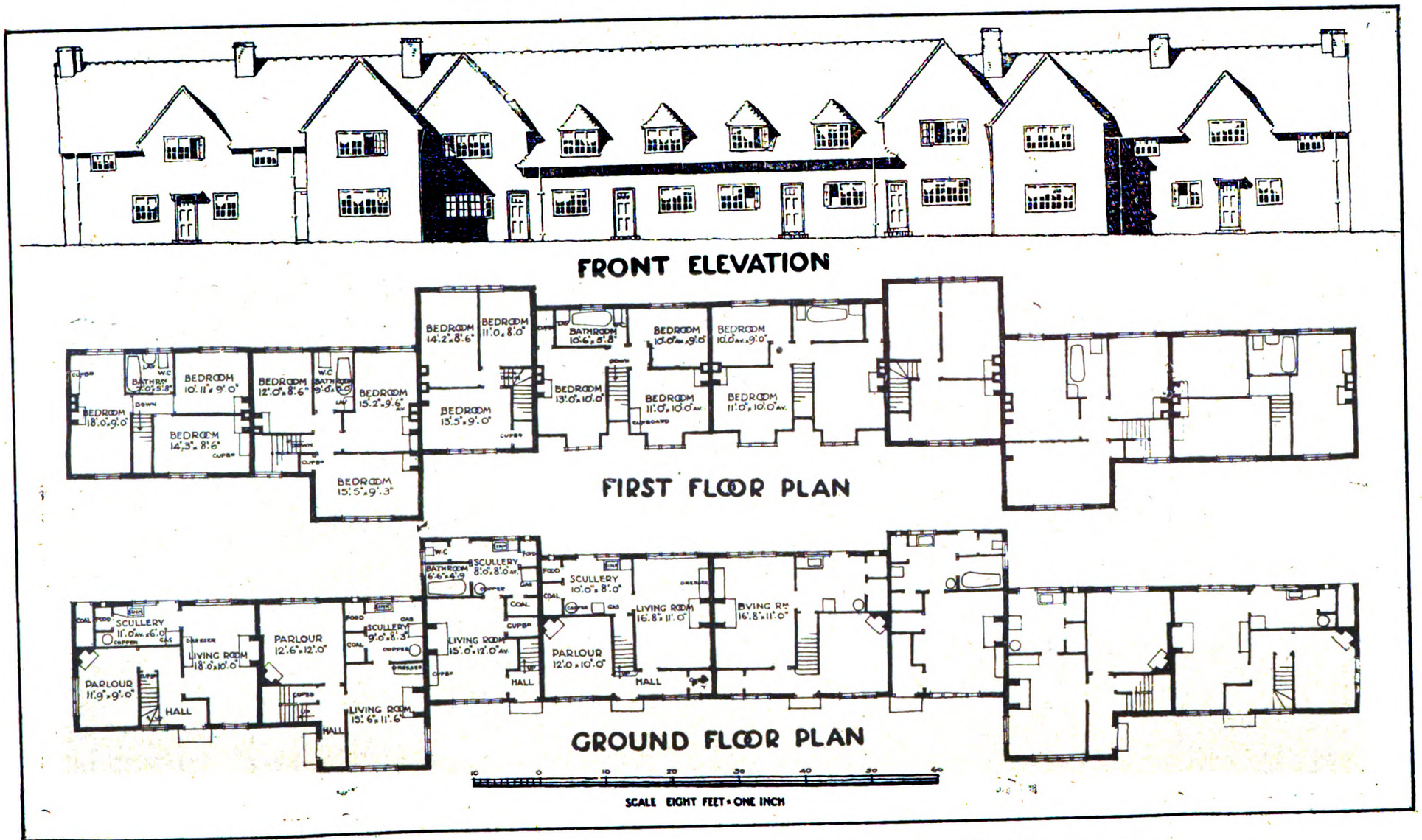

GOVERNMENT HOUSING SCHEME, WELL HALL ESTATE, WOOLWICH.

Sir FRANK BAINES, C.B.E., M.V.O., H.M. Office of Works, Architect.

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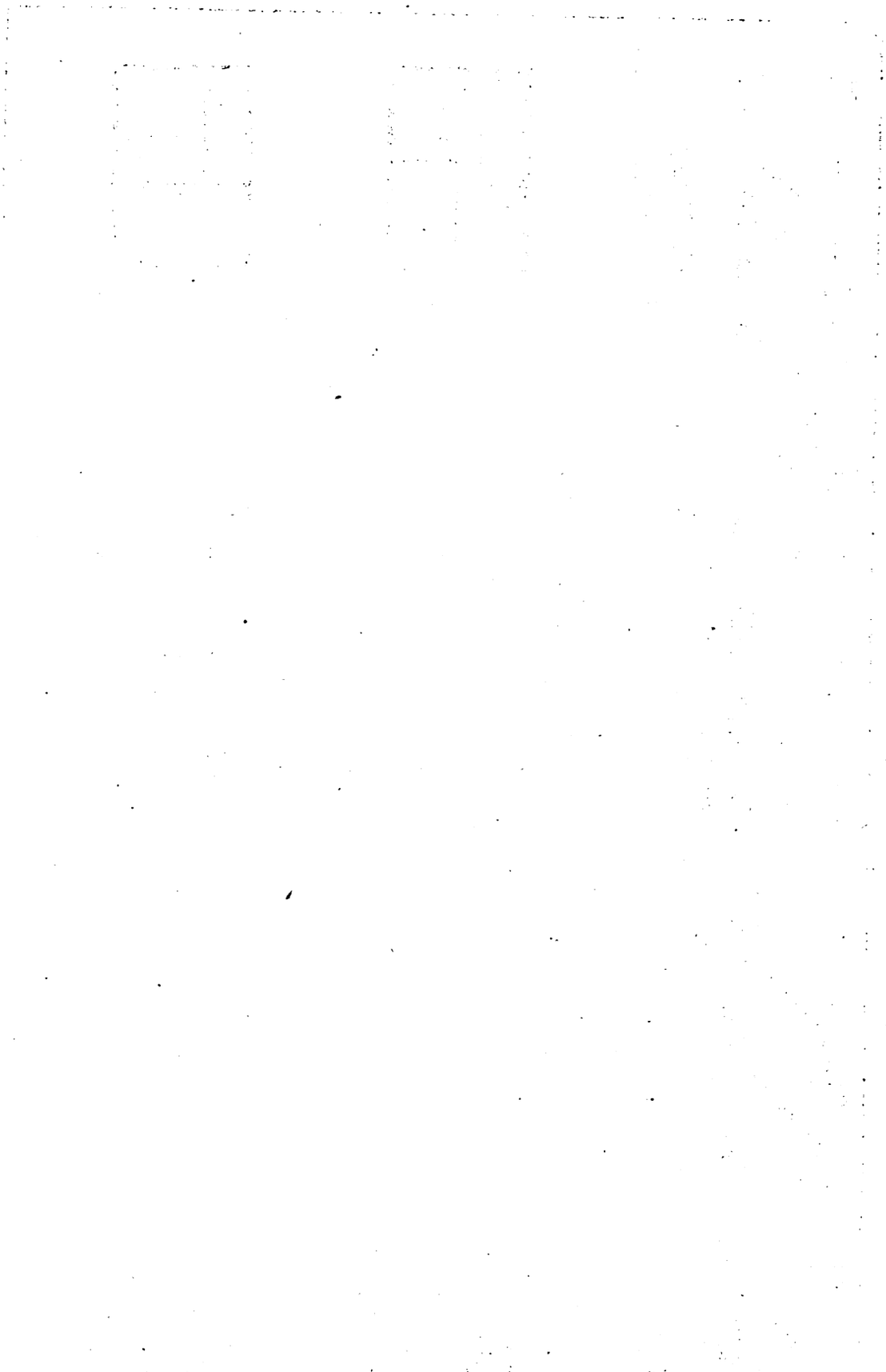

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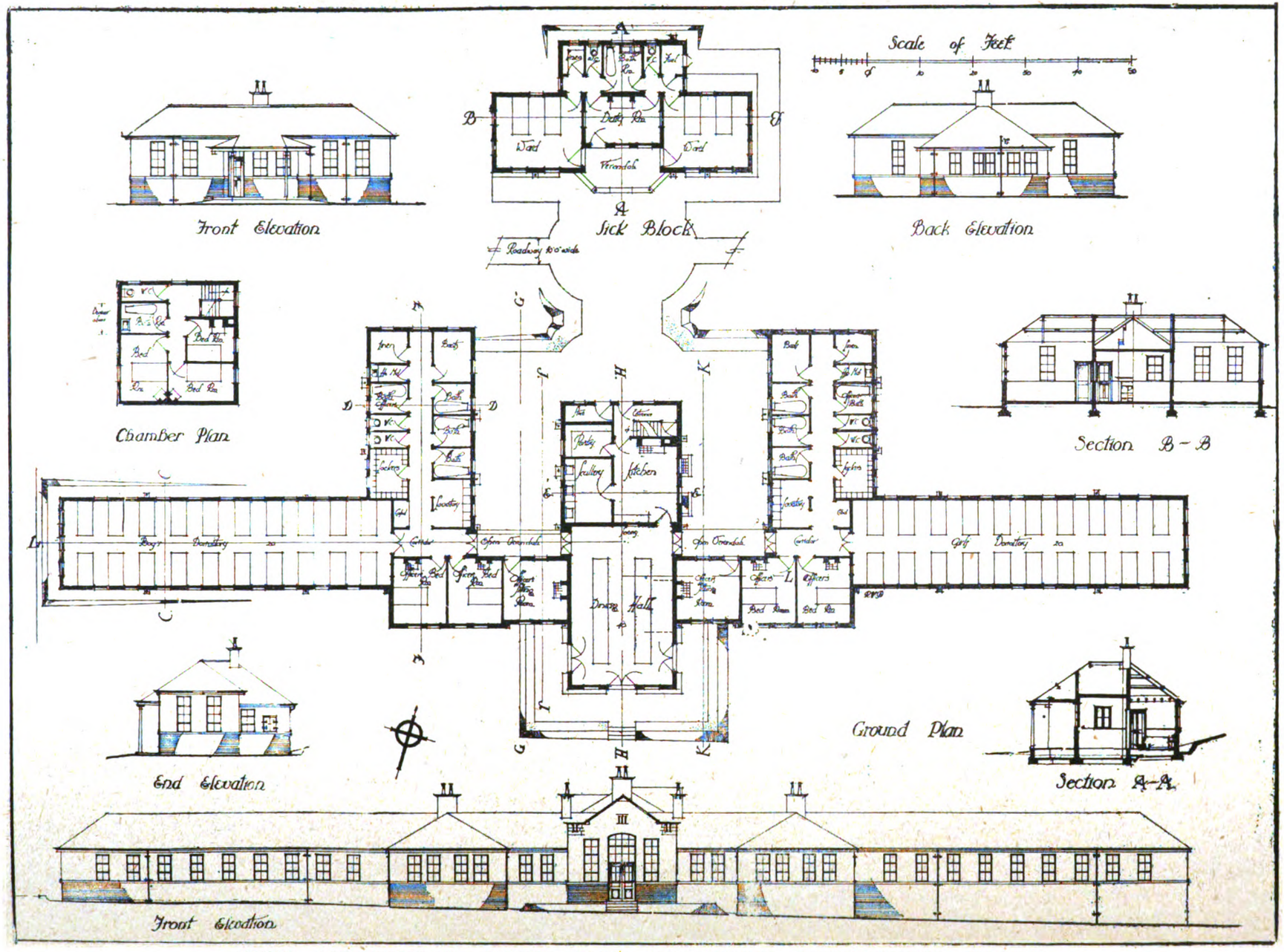

OPEN AIR SCHOOL, DAISY HILL, BRADFORD: RESIDENTIAL BLOCK.

Mr. W. WILLIAMSON, Licentiate R.I.B.A., City Architect.

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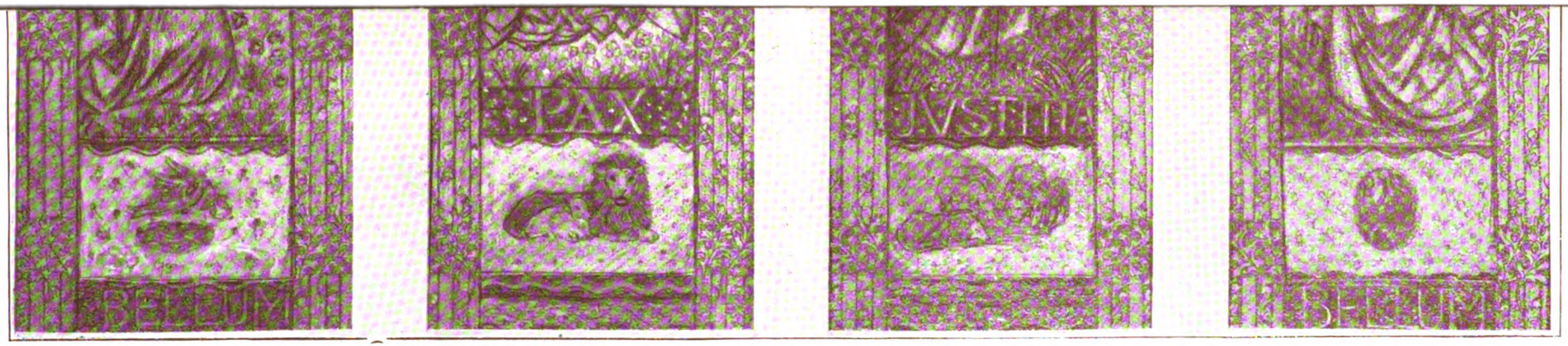

"PEACE" AND "JUSTICE," STAINED GLASS WINDOW FOR THE PEACE PALACE AT THE HAGUE.
CARTOON OF THE CENTRAL WINDOW. DESIGNED BY MR. HENRY A. PAYNE, ROYAL ACADEMY, 1918.

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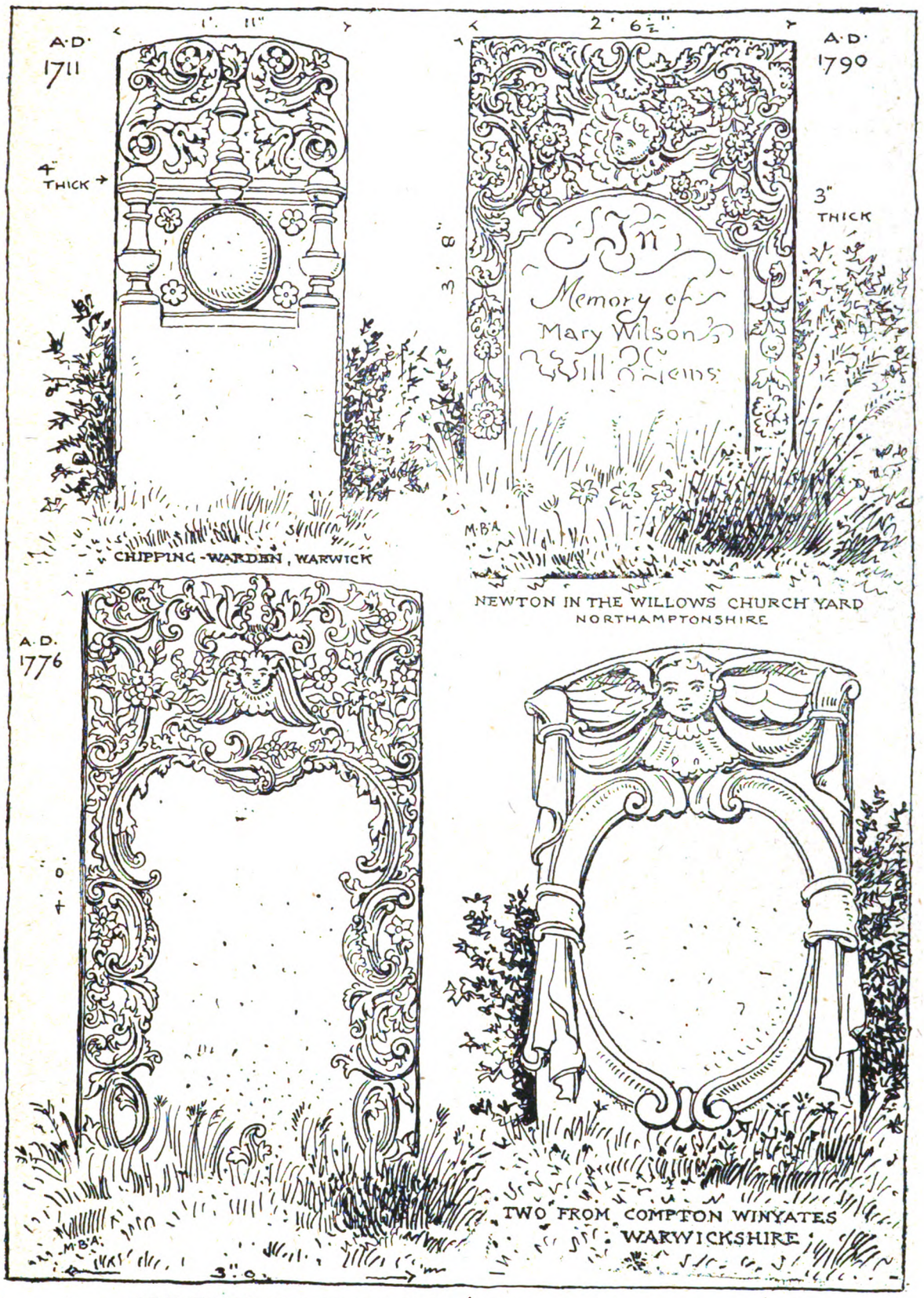

OLD·ENGLISH·HEAD·STONES·IN·CHURCH·YARDS·
SKETCHED BY MAURICE B. ADAMS.

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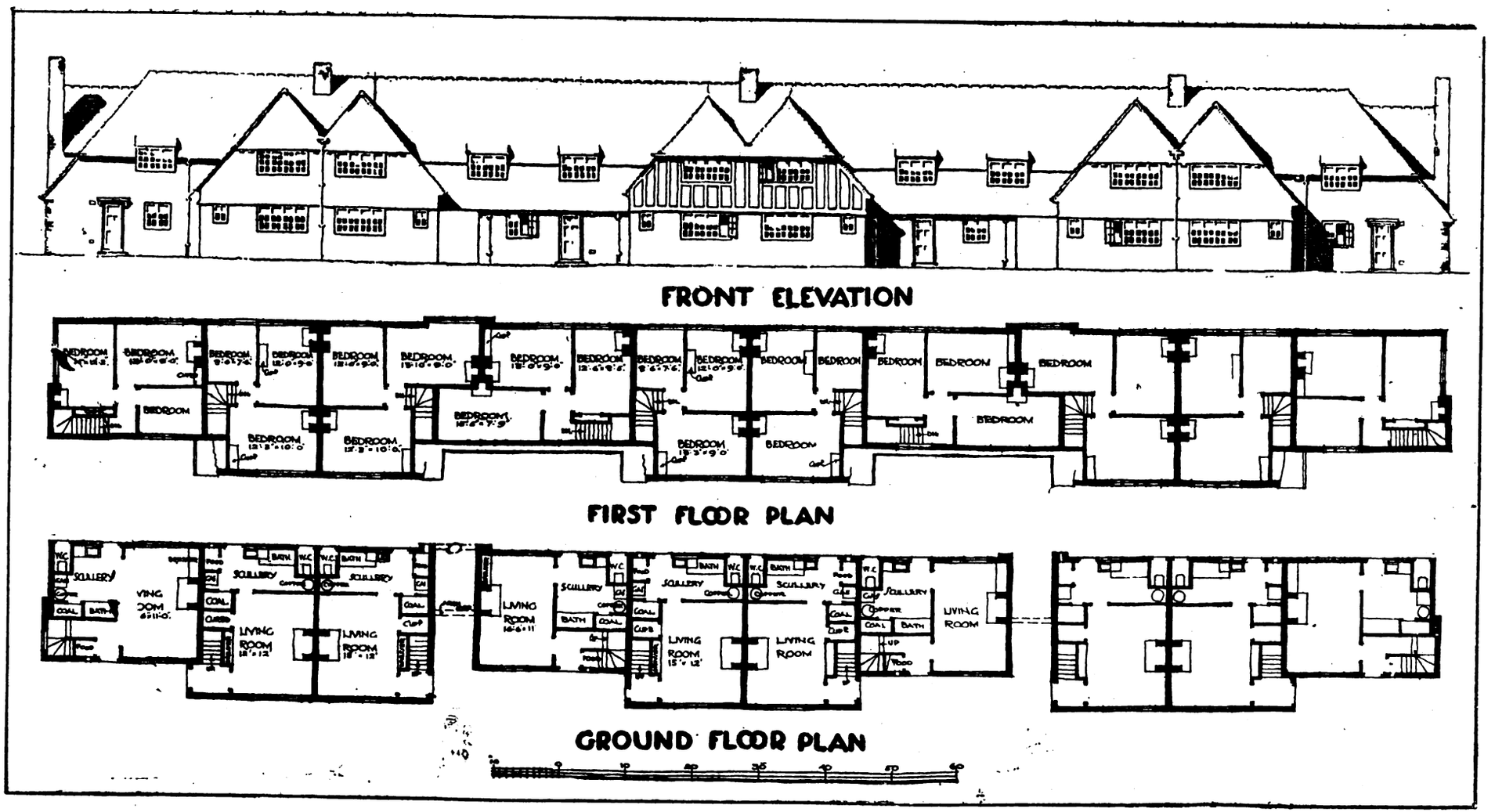

GOVERNMENT HOUSING SCHEME, WELL HALL ESTATE, WOOLWICH.
Sir FRANK BAINES, C.B.E., M.V.O., H.M. Office of Works, Architect.

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THE RIGIDITY OF RIVETED JOINTS IN STEEL STRUCTURES.

A series of tests to determine the rigidity of riveted joints connecting members of steel frame structure were made recently under the general supervision of Dr. F. H. Newell, head of the Department of Civil Engineering of the University of Illinois.

Six test pieces, listed in Table I, were used. They were tested in pairs in a 300,000 pound Olean four-screw testing machine under conditions that would maintain in actual practice. The strain measurements included the slip of rivets and the deformation of the angles used in making the joints

DEFINITION OF SLIP.

In figuring stresses in riveted connections, it is necessary to assume that the connections are perfectly rigid. It is also customary, in analysing the stresses in a stiff structure to consider that where a column and girder intersect, both members maintain a constant cross-section up to the point of intersection of the elastic curves of the members, except for members having a width of zero.

In determining the slip in the connections from the tests the computed rotation of a point in the girder relative to a point in the column, due to the strain in the material, was subtracted from the measured rotation of one point relative to the other. In computing the relative rotation of the two points due to the strain of the material, both members were considered as having constant cross-sections up to the point where the elastic curves of the two members intersect; thus what is really obtained in the analysis is not the error due to slip alone, but rather the combined error resulting from two assumptions, one that the connection is perfectly rigid, and the other that both members maintain a constant cross-section up to the point of intersection of the two elastic curves.

THE EFFECT OF THE SLIP IN CONNECTIONS UPON A RECTANGULAR FRAME.

In a rectangular frame subjected to a shear parallel with one side of the frame, if the connections at the corners of the frame are frictionless hinges, the frame will collapse. If, however, the connections at the corners are capable of resisting moment, the frame will remain substantially a rectangle, but possibly deformed. The rigid connections between the vertical and horizontal members hold the ends of the vertical members in a nearly vertical position and thus prevent the frame from collapsing.

In order to determine the magnitude of the change in the deflection and in the distribution of the stresses in a rectangular frame due to slip in the connections, the standard formulas are used.

STRENGTH OF TEST PIECES.

In computing the allowable working loads upon the test pieces the following unit stresses were used:—

Axial bending stress ....16,000 lbs. per sq. in.
Shear on rivets .....12,000 lbs. per sq. in.
Bearing on rivets .....24,000 lbs. per sq. in.

The computed working loads are given in column 3 of Table 2. Methods of computing the working loads on connections of the types used in the test pieces have not been standardised. The methods used in computing working loads given in Table 2 are as follows:—

A1.—The strength of the connection of test piece A1 to resist moment is considered to be the moment of a couple composed of two horizontal forces; one force is applied at the centroid of each flange; the magnitude of each force is the working strength in bearing of the eleven rivets connecting each flange of the girder to the gusset plate. The working load on the girder is the load which applied at the outer end of the girder produces the given moment on a vertical section through the outer row of rivets in the gusset plate. The vertical shear is considered to be taken by the vertical splice plates connecting the girder web to the gusset plate.

A2.—The working load for test piece A2 was determined in the same manner as for test piece A1.

A3.—The strength of the connection of test piece A3 to resist moment is considered to be the moment of a couple composed of two horizontal forces; one force is applied at the top surface of the girder and the other at the bottom surface of the girder. The magnitude of each force is the working strength in shear of the two rivets connecting the lug angle to the girder. The working load on the girder is the load which applied at the outer end of the girder produces the given moment on a vertical section through the rivets connecting the lug angles to the girder.

A4.—The strength of the connection of test piece A4 to resist moment is determined by the same method as for test piece A3. The working load on the girder is the load which applied at the outer end of the girder produces the given moment on a vertical section through the middle rivet connecting the lug angle to the girder.

A5.—If the strength of the connection of test piece A5 to resist moment is regarded as determined by the strength to resist moment of the rivets attaching the connection angles to the girder; if the outer rivet at each end of the connection angles is considered to be in double shear; if the strength of the intermediate rivets is considered as determined by bearing on the web plate of the girder, reduced one-third for the loose fill, and if the stress in the rivets varies as the distance from the centre of gravity of all the rivets, the working load on the girder is the load which applied at the outer end of the girder produces the given moment on a vertical section through the rivets attaching the connection angles to the girder. The vertical stress upon the rivets is neglected.

A6.—Consider the strength of the connection of test piece A6 to resist moment to be determined by the strength of the rivets attaching the connection angles to the girder web; consider the stress on each rivet due to moment to vary as the distance from that rivet to the centre of gravity of all the rivets, and consider the vertical shear to be evenly distributed over all the rivets. The working load upon the girder is the load which applied at the outer end of the girder produces on a vertical section through the centre of gravity of the rivets attaching the connection angles to the girder web a moment equal to the resisting moments of the rivets.

The unit stresses which have been used in determining the working loads on the girders as given in column 3 of Table 2 are the usual allowable working stresses due to dead and to live loads. This type of connections for the test pieces is used largely for building frames in which the bending stresses are due to wind loads. When wind load stresses are combined with dead and live load stresses, the allowable working stresses are usually fifty per cent. greater than the allowable working stresses for dead and live loads alone. In discussing the results of the tests, loads one and one-half times the working loads for dead and live loads alone, corresponding to wind load working stresses, are used. These loads are given in column 4 of Table 2.

TABLE I.—PROPERTIES OF COLUMNS AND GIRDERS.

Test piece.	Column. Section.	Column. I for gross section.	Girder. Section.	Girder. I for gross section.	For frame 15 feet high and 20 feet wide, $K = \frac{I}{l}$ for girder. $nK = \frac{I}{l}$ for column. nK (for col.)	K (for girder)	n
A1	1—*Pl*—14 x ⅜ 4—*Ls* 5 x 3 x ⅜	584	1—*Pl*—24 x ⅜ 4—*Ls*— 5 x 3 x ⅜	1966	3.25	8.20	.4
A2	Same as A1	584	Same as A1	1966	3.25	8.20	.4
A3	12"—*I*—31.5	215.8	12—*I*—31.5	215.8	1.20	.90	1.33
A4	12" Flat—*I*—31.5	9.5	12—*I*—31.5	215.8	.05	.90	.055
A5	Same as A1	584	Same as A1	1966	3.25	8.20	.4
A6	8"—*H*—39	139.5	12—*I*—31.5	215.8	.78	.90	.86

TABLE III.—EFFECT OF SLIP IN CONNECTIONS UPON MOMENTS IN RECTANGULAR FRAMES.

Test piece.	Errors due to slip.	P x h in lbs.	1·5 times working load.
A1	9%	12,600,000	26,250
A2	7%	13,300,000	27,800
A3	138%	910,000	4,545
A4	50%	1,290,000	7,500
A5	104%	2,000,000	5,100
A6	435%	742,000	4,125

The main object of these tests was to determine whether serious error is introduced into computations for stresses in steel frames by the assumption that the joints are perfectly rigid.

The rigidity of various types of joints has been studied by means of tests, and the error introduced into computations studied by means of mathematical analysis of the action of frames with slip at the joints of a magnitude such as was observed in these tests. The action under a load producing stresses equal to one and one-half times the working stress has been taken as a criterion, and for the joints studied the following conclusions reached:

Connections of the type used for specimens

TABLE II.—LOADS ON TEST PIECES.

Test Piece.	Load at failure on one girder. Lb.	Working Load. Lb.*	1.5 times working load. Lb.†	Load at failure divided by working load.	Moment on connection at failure In. Lb.	Manner of failure.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A 1	44,450	17,500	26,250	2.54	5,334,000	Column buckled
A 2	37,500	18,540	27,800	2.02	4,500,000	Gusset plate buckled
A 3	10,250	3,080	4,545	3.38	537,000	Lug angle opened
A 4	13,550	5,000	7,500	2.71	570,000	Column buckled and angle opened
A 5	19,000	3,400	5,100	5.59	1,860,000	Connection angle opened. Rivet failed in tension
A 6	11,250	2,750	4,125	4.10	506,000	Connection angles opened

* Based upon the following unit stresses:—
Axial bending stress .... 16,000 lb. per sq. in.
Shear on rivets ..... 12,000 ,, ,, ,,
Bearing, rivets ..... 24,000 ,, ,, ,,
† Corresponding to allowable working stresses for wind loads.

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A1 and A2 are so rigid that for the purpose of analysing stresses in rectangular frames the connections can be considered as perfectly rigid without introducing serious errors into the results.

The error due to slip in the connection is less for A2 than for A1.

Connections of the type used for specimens A3, A4, A5, and A6 for the purpose of analysing stresses cannot be considered perfectly rigid.

Table 3 is a tabulation of the result of the various tests, showing the errors due to slip in riveted connections under ordinary working conditions.

BROKEN ON THE WHEEL.*

Mr. Willoughby may do better next time if his style is less diffuse and if he will cut his long preliminary descriptions of his characters and leave the latter to impress their individualities on his readers. If he will omit all the tags with which he garnishes his pages—not infrequently quite foreign to the paragraphs in which they are inserted—eschew double adjectives, make his architectural descriptions read less like inventories, refrain from his somewhat tiresome adjurations to the "gentle reader," and shorten the long letters his *dramatis personæ* write to each other, he will, at any rate, give his story a chance. And if his villains must use naughty words, they will less irritate us if he prints them instead of in such sentences as on p. 84 and elsewhere: "I seed yer do it myself, yer (adjectival) son of a bitch." Perhaps, too, if architects, as in Mr. Cresswell's story which we reviewed a fortnight ago, *will* have it, whether their clients like it or not, "Neo Grec" need not, as described on p. 231, be "designed in a feeling of full-coloured mahogany, the newels and balustrade being richly carved and embellished."

For, handled wisely, the plot might have been made something of, and the puppets creatures of flesh and blood. Newman Westerby, the hero, it is true, needs bracing up a bit. Born of George and Elizabeth Westerby, who run the "Cotton Spinners' Arms" at Stourport, with a "large-hearted" father, who comes badly to grief as a gambler, and "an exquisite female and lovable lady" for his mother, who dies while giving birth to a still-born baby in her terror at a "holocaust"—that is, a calamitous fire at a factory at Stourport—Newman leaves home in disgust at his father's speedy second nuptials with his barmaid, and we get a by no means badly-written chapter about the "Plebeian Delights" of Stourport Wakes, followed by an introduction to Major Dennis Hennessy, a popular Irish adjutant to the local volunteer battalion, and next by a spirited pen-sketch of a five-mile scratch bicycle race for the "Northern Championship," which young Westerby had as good as won when, brought to the ground by a dastardly piece of foul play, he is carried senseless into the Stourport Infirmary, where, thanks to "the ministering angel," Sister Helen Margaret Berkeley, he recovers, with whom he falls in love, and ultimately marries, after a "prodigal's return" from Paris and a narrow escape at the hands of a baulked harlot from murder and other perils of the "meretricious" atmosphere of the gay city.

If, as promised, a considerable portion of the after-life of the wedded pair remains to be told in a future volume, it will probably not lose in interest if local life and colour are relied on for success, for Mr. Willoughby is much at his best then; and if he gives us more about Joe Broadhurst and Jimmy Potter, the landlord of the "Buck and Dog," and Hezekiah Shepperd, the elder in the Christadelphian chapel, and "Old Betty," the relict of the life-long Rechabite, he will well deserve three times as long a subscription list as the substantial one which has endorsed his first effort.

* "Broken on the Wheel." A Lancashire Romance. By G. H. Willoughby, F.R.I.B.A. M.S.P., L.A.A. (Manchester: Marsden and Co., Ltd. 7s. 6d.).

Correspondence.

COTTAGE BUILDING.

To the Editor of THE BUILDING NEWS.

Sir,—I am sorry no more capable pen has taken up the subject of Mr. W. J. Burrow's letter respecting the fees of architects for municipal cottage building.

One portion of his letter, referring to the quantity surveying fees, interests me professionally; but, as one of the founders of the Quantity Surveyors' Association, I feel sure that association will fall into line with the R.I.B.A.

But apart from one's professional interest we are interested as citizens, and, as such, two matters stand out prominently—(a) Unless architects' fees are sufficiently low, corporations will engage architects' assistants themselves, and however competent they may be, there is likely to develop that dreadful monotony of style which is so utterly depressing, and which could be avoided if each architectural ratepayer were given a commission; and (b) the other question is one of supplies. If one-tenth of the houses so glibly talked about are built within ten years—whether occupied or not—they will swallow up the whole available supply of building material, leaving nothing for factories, hospitals, and villas, unless the Government take over and ration the entire building trade, which would be a most unjustifiable interference with the freedom of trade in peace times.—Yours obediently,

W. H. WOOD.

Queen Square House, Leeds.
December 19, 1918.

LEGAL INTELLIGENCE.

COUNCIL AND EX-SURVEYOR. — SEWER THROUGH BUILDING SITE.—A dispute between the Corwen Council and Mr. John Williams, formerly surveyor to the Llangollen Rural Council, was submitted to arbitration at Oswestry last Wednesday. Mr. John Williams acquired a tract of land near the sea, at Corwen, for development as building sites. Having demolished and removed cottage properties from it, he was prepared to negotiate sales, when the Corwen Council commeneced their scheme of town drainage. This scheme carried the main sewer through Mr. Williams's land, which it traversed diagonally from corner to corner, rendering it, as he stated, useless for building purposes. It was contended for the Council that compensation should be on the basis of that paid to owners of agricultural land traversed by the sewer, who were paid so much per lineal yard.—After hearing evidence, the arbitrators promised to give their decision in due course.

CONTRACTOR'S CLAIM FOR "EXTRAS" AGAINST THE CARDIFF CORPORATION.—The case against the Cardiff Corporation was finally decided in the House of Lords on December 17 in favour of Mr. Robert Brodie against the Corporation of Cardiff. In November, 1910, Mr. Lewis Nott, since dead, entered into a contract with the corporation for the construction of an impounding reservoir in the Taff Fawr Valley, the price to be £201,077. During the progress of the works the engineer made a number of requisitions on the contractor as to the work to be executed and the materials to be used, and insisted that these requisitions were covered by the terms of the contract, and were included in the contract price. The contractor insisted that they should be treated as extras, and on the matter being referred to arbitration the arbitrator made an award in his favour. Mr. Justice Bray also decided against the corporation, but by a majority the Court of Appeal reversed that decision. In the House of Lords on Tuesday week the substantial question was whether the claim for payment was barred by the want of a certificate in writing. The Lord Chancellor and Lords Atkinson, Shaw, and Wrenbury decided against the corporation. Lord Sumner dissented.

The death is announced on the 20th, at Howard's Lane, Putney, of Mr. Matthew Garbutt, F.R.I.B.A., A.M.Inst.C.E., of 3, Staple Inn, W.C.1, aged 55 years. He was the Chairman of the Practice Committee of the R.I.B.A. The funeral was at Putney Vale Cemetery on Monday last.

Our Office Table.

The historic armours of King Henry VIII., Charles I., Robert Dudley, Earl of Leicester, and other celebrities of the Elizabethan period, which had been removed for safety during the war period, have now been reinstated at the Tower of London, and the rearrangement of the armouries, which was held over owing to war conditions, is complete. Amongst the additions are those of William Somerset, Earl of Worcester, and Sir John Smythe, which the King transferred from Windsor Castle to the Tower in 1914. These pieces were removed by James II. from the Tower to Windsor in 1686.

The A.A. Atelier for advanced students and members of the architectural profession generally, which was closed in 1914 owing to the outbreak of war, will re-open on January 6, 1919, at the Architectural Association, 35, Bedford Square, where special accommodation has been arranged. It is hoped that the Atelier, at the present time, will be of special value to those who, during their service with the Colours, have lost touch with problems of architectural design. Full particulars of programmes, etc., can be had of the Secretary, the Architectural Association, 35, Bedford Square, W.C.1.

Mr. Delissa Joseph, F.R.I.B.A., has given notice to move the following resolution at the R.I.B.A. meeting of January 6:—That, in view of the recommendation of the committee appointed by the Ministry of Reconstruction for the indefinite continuance in peace time of the war time restrictions on building, and in view of the serious effect which such continuance would have upon the work of architects and building contractors and of the large body of building trade employees who will be released by the demobilisation of the Army, this meeting requests the council to at once arrange for a representative delegation to be received by the Minister of Reconstruction, before whom they may place the arguments for the speedy removal of the restrictions on building.

Senator Millen, Australian Minister for Repatriation, moving the second reading of a War-Service Homes Bill in the Federal Senate last week, said that on a £600 house there would be a payment of 13s. 6d. weekly on 37 years' terms, and of 15s. 4d. a week on 26 years' terms. On a £500 house, on 20 years' terms, the weekly payment would be 15s. The Bill contained safeguards against speculative sales to outsiders. Possibly the Bill would involve an expenditure of £50,000,000, calculated on the erection of 100,000 homes. In his opinion the Bill was the most liberal measure presented by any Legislature. The Bill was well received, and the second reading agreed to.

Owing to the heavy extra expenses which will fall upon highway authorities in the near future in connection with work on roads and bridges, as the result of higher prices, lack of materials, shortage of labour, difficulties of transport, and the necessity of putting in hand much repair and reconstruction work which had to be deferred during the war; and having regard to the necessity of stimulating useful work at the present time, the Government has decided, on the recommendation of the Road Board, to make special grants-in-aid to an aggregate amount of £10,000,000, of which £1,750,000 will be provided out of the Road Improvement Fund, and £8,250,000 will be drawn from the national exchequer.

Always the best and handiest throughout its 38 years of publication, Waterlow's "Architects' and Surveyors' Diary" (Waterlow Bros., and Layton, Ltd., Waterlow House, Birchin Lane, E.C.) contains all its usual useful features, and is published at 5s. and 7s. 6d., according to diary space and binding. Congratulations are specially due this time on the maintenance of the good paper, printing and binding, difficult enough for all of us of late, and indispensable as re-

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gards a diary which has to stand the daily wear and tear of the whole year.

In anticipation of the erection in Scotland of a large number of war memorials, the Royal Scottish Academy invite the co-operation, on a General Committee, of representatives from public bodies throughout Scotland, and of some influential private persons; and propose that an Administrative Committee, to be constituted from the General Committee, should be prepared to consider and report on the propriety and artistic merit of designs submitted to it, and also to advise in regard to questions of site and general appropriateness. Communications should be addressed to the "War Memorials Committee, The Royal Scottish Academy, Edinburgh."

LIST OF TENDERS OPEN.

COMPETITIONS.

Jan. 1, 1919.—Designs for Housing Scheme at Birmingham. Premiums of £150, £100, and £50. Town Clerk, Council House, Birmingham. (See advt.)

ARCHITECT AND HOUSING.

Jan. 14. — Architect wanted by the Newton-in-Makerfield Urban District Council, to give whole time to housing scheme. Application to C. Cole, Clerk to the Council, Town Hall, Earleston, Lancs. (See advt.)

BUILDINGS.

Dec. 31.—Completion of 14 houses (exclusive of street works) at Gellifaeleg, Penydarron, and Merthyr Tydfil.—For the Corporation.—Particulars from the borough architect, Town Hall, Merthyr Tydfil. Tenders, endorsed "Gellifaeleg Houses," to T. A. Rees, Town Clerk.

SANITARY.

Jan. 2.—Alterations to and repairs, renewals, and replacements of the drains on workhouse premises, in accordance with plans and specifications prepared by Mr. J. Morgan, surveyor and waterworks engineer, which may be seen at the Union Offices, Monk Street, Abergavenny.—For the Guardians.—Tenders to W. H. P. Scanlon, Clerk, Union Offices, Monk Street, Abergavenny.

Jan. 8.—The Imperial Trade Correspondent at Johannesburg has forwarded a copy of the specification, conditions of contract, and form of tender, together with a blue print, in connection with a call for tenders by the Johannesburg Municipality for supply and delivery of 5,000 sanitary pails with eyelet holes and 500 lids for same (contract No. 415). Copies of the specification, etc., may be obtained from the Town Clerk, Municipal Offices, Johannesburg, who will also receive sealed tenders, on the proper forms, up to noon on January 8. A copy of the above-mentioned specification, etc., may be consulted by British manufacturers of the goods mentioned at the Inquiry Office of the Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2.

We are glad to learn that Lieutenant E. W. Ayton, surveyor to the Crook Urban Council, who had been officially reported dead, is now reported to be alive and progressing favourably in hospital after an attack of pneumonia.

It is proposed to erect a social club-house as a war memorial to the old boys of the East Ham Technical College Secondary School. Two tablets are also being placed in the college, one bearing the names of students who have fallen and the other a list of those who have gained decorations.

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TENDERS.

*****Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.**

GREENWICH.—For the erection of a shelter for disinfecting apparatus at the Tunnel Avenue Depot, for the Greenwich Borough Council:—

W. Mills and Sons, Ltd £359 0 0
(Accepted.)

ISLINGTON.—For additional lavatory at the town hall, for the Islington Borough Council:—

J. Mather, 20 per cent. on prime cost; McCormick and Sons, Ltd., 20 per cent. on prime cost; J. Johnson, 40, Halton Road, Canonbury, 12 per cent. on prime cost (accepted).

LONDON.—For sundry works, for the Metropolitan Asylums Board. Accepted tenders:—

St. Margaret's Hospital, provision of a mortuary and internal distempering works in connection therewith, C. H. Boyd and Son, £49 10s.; Brook War Hospital, renewal of copper tubes to four hot-water service heaters, Broughton Copper Co., £57 8s. 1d.; South-Eastern Hospital, repairs to gutters, roofs, and chimney stacks, L. Kazak, £78.

LONDON, S.E.—For repair of roads at the Park Hospital for the Metropolitan Asylums Board:—

Fry Bros., Ltd., Norman Road, Greenwich £227 0 0
Woodham, H., and Sons, Sangley Road, Catford 183 0 0
Wheeler, W. H., and Co., Ltd., 14, New Kent Road 135 0 0
Manders, W., and Co., Leyton Green, Leyton* 98 0 0
Engineer-in-chief's estimate, £145.
* Recommended for acceptance.

WEST HAM.—For repair of corrugated iron roof of the dinner room at the Beckton Road School, for the West Ham Town Council:—

H. C. Horswill £39 0 0
Recommended for acceptance.

At Market Harborough it is proposed as a War Memorial to the fallen of the town to erect a free library at a total cost of £12,000.

The Ministry of National Service gives notice that as and from Saturday last the requirement of licences for building operations is cancelled.

The Crook U.D.C. has appointed Messrs. Morton and Burrell, of Durham and South Shields, as architects for the local housing scheme.

The death is announced in his seventy-seventh year of Mr. W. V. Gough, F.R.I.B.A., senior partner of the firm of W. V. and A. R. Gough, of Bridge Street, Bristol.

The General Annual Assembly of the Royal Architectural Institute of Canada will be held at Montreal on January 17 and 18, 1919, at the same time as the Annual Convention of the Province of Quebec Association of Architects.

In a dispute at the City of London Court as to liability for air-raid damage to a building, Judge Rentoul has decided that, as there had been no previous legal decision, the landlord and the tenant should share the loss equally.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.

It is particularly requested that all drawings and all communications respecting illustrations or literary matter, books for review, etc., should be addressed to the Editor of the BUILDING NEWS, Effingham House, 1, Arundel Street, Strand, W.C.2, and not to members of the staff by name. Delay is not infrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

*****Drawings of selected competition designs, important public and private buildings, details of old and new work, and good sketches are always welcome, and for such no charge is made for insertion. Of more commonplace subjects, small churches, chapels, houses, etc.—we have usually far more sent than we can insert, but are glad to do so when space permits, on mutually advantageous terms, which may be ascertained on application.**

Most of the back issues are to be had singly, price 6d. each, postage 1d. Subscribers requiring them should order at once, as they soon run out of print.

TO ALL READERS AND ADVERTISERS.—The prospect of early peace encourages the hope that at no distant date the restrictions on newspapers of the past four years which have so harassed all of us will be removed, and we shall return to normal conditions of production. But not, we fear, at so early a period as we could wish. Paper is still rising in cost, and the price for our December deliveries is the highest yet paid. Printing and engraving are still double war prices. We are completely in the dark as to the Paper Controller's intentions with regard to next year's supply, which limited us to half the quantity used in 1917. So that the already gratifying return of readers as subscribers who have missed their paper so long, and of advertisers who are naturally anxious to re-occupy space we have not been able to give them, is not altogether without embarrassment. Old readers and constant advertisers must, of course, be first, as far as possible, and we respectfully ask all readers who usually renew their subscriptions about the end of the year, and all advertisers whose contracts with us fall out about the same time, to favour us with their instructions *as soon as possible*. Other readers and advertisers whose commands may reach us too late are assured we shall only too gladly welcome their return when our circulation and our space are once again equal to the normal demands of pre-war days.

RECEIVED.—J. W. V.—W. A. A.—I. L. G. Co., Ltd.—H. A. C.—I. C. S.—J. G. K., Ltd.—A. V., Ltd.

J. G.—Yes.

T. R. PRATT.—Please send.

CHIPSTEAD.—The first-named firm is all right. We know nothing of the other.

Woodcutting machinists on the North-East Coast are wanting a thirty-six hour working week.

It has been decided that the parish war memorial at Potterspury shall take the form of a public hall.

Mr. Cecil Claude Brewer, of Queen Square, W.C., has left £8,905, and has bequeathed £100 to the Architectural Association towards a memorial to architects who have fallen in the war.

It is settled to initiate a fund for the completion of St. Saviour's Church and the Church of St. Michael and All Angels, and for the erection of St. Andrew's Hall, Westcliff-on-Sea, to cost approximately £25,000.

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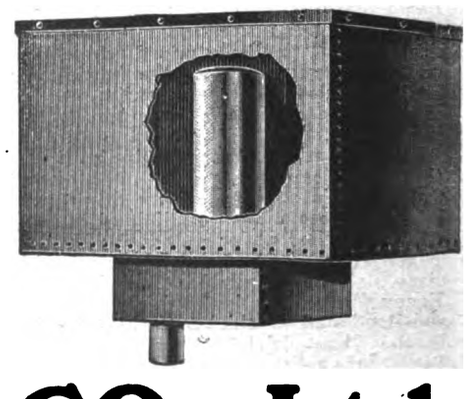

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CAPTAIN OF THE WEEK.—Captain E. G. Fleming.

NEXT FOR DUTY.—Captain W. Hynam.

SUNDAY, JULY 7.—Commandant's Parade at Waterloo Station, 8.45 a.m., for work at Esher. Dress: Drill Order with haversacks and water-bottles. Mid-day and tea rations to be carried.

MONDAY, JULY 8.—Adjutant's Technical Lecture (Earthworks), 6.30—7.30. Signallers. 6.30—8.30.

TUESDAY, JULY 9.—No. 3 Company, Entrenchments, etc., 6.30—8.30. Recruits' Drill, 6.30—8.30. First Field Dressing Demonstration by the D.M.O.

WEDNESDAY, JULY 10.—No. 1 Company, Entrenchments, etc., 6.30—8.30. Recruits' Drill, 6.30—8.30.

THURSDAY, JULY 11.—No. 2 Company, Entrenchments, etc., 6.0—8.0. Recruits' Drill, 6.30—8.30. Signalling Section, 6.30—8.30. Ambulance Station, 6.30—8.30. First Field Dressing Demonstration by the D.M.O. Band Practice, 7.0.

FRIDAY, JULY 12.—Adjutant's Technical Lecture (Earthworks), 6.30—7.30.

SATURDAY, JULY 13.—Engineering Reconnaissance Scheme for Officers.

SPECIAL NOTICES.—All drills will take place at Headquarters unless otherwise stated.

The M.O. will attend for the Examination of Recruits on Thursday evening at 6.30.

Annual Camp.—This Camp will be held at Esher from August 3 to August 11, both dates inclusive. Names can still be sent in.

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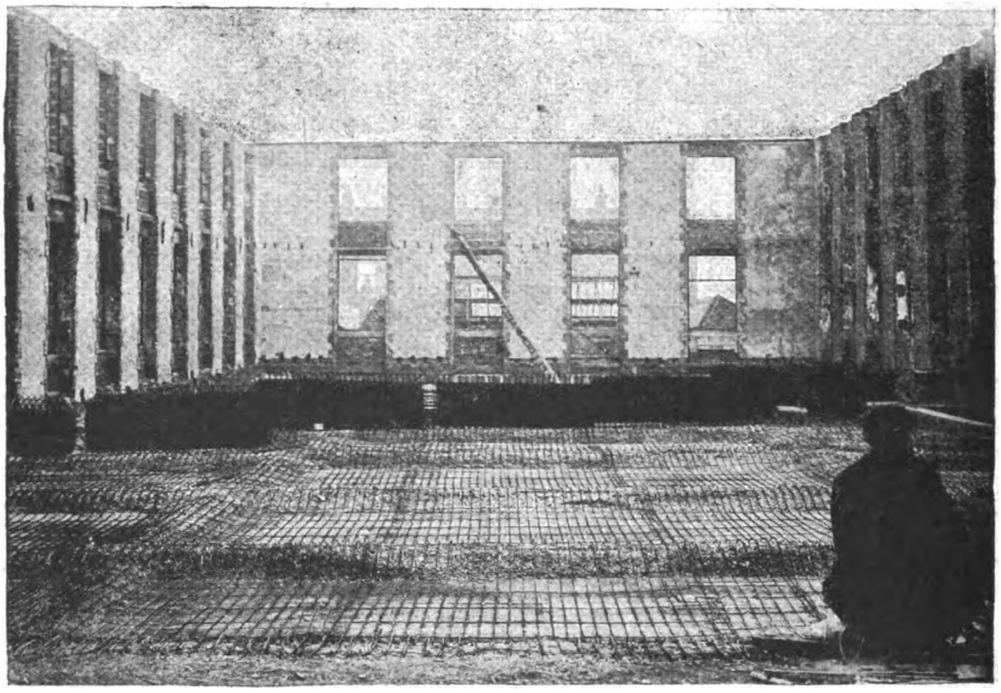

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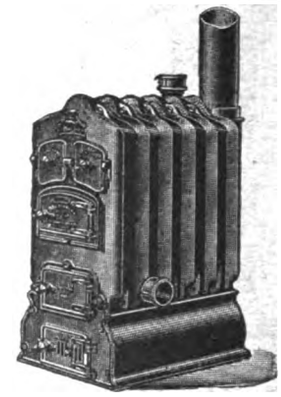
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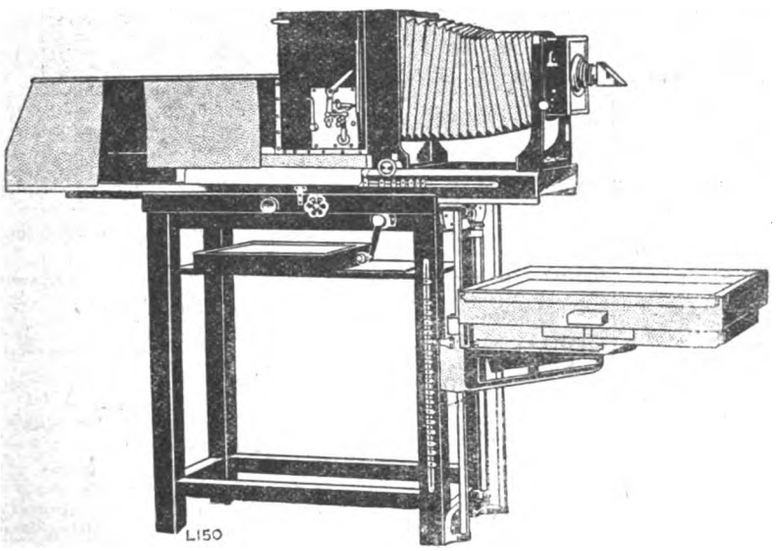

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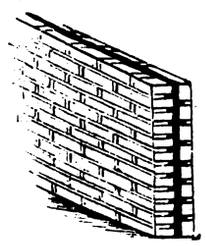

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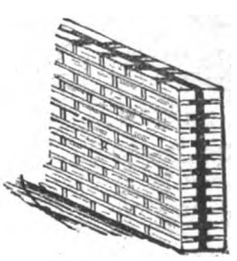

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Bell's United Asbestos Co., Ltd., Southwark Street, London.

Public—
Kerner-Greenwood & Co., Ltd., Ann's Square, King's Lynn.

Reinforced Concrete—
British Reinforced Concrete Engineering Co., Ltd., 1, Dickinson-street, Manchester.

Roofing—
Anderson, D., & Sons, Ltd., Lagan Felt Works, Belfast.
Bell's United Asbestos Co., Ltd., Southwark Street, London.
Braby, F., & Co., Ltd., Euston Road, N.W.
British Reinforced Concrete Engineering Co., The, Ltd., 1, Dickinson-street, Manchester.
British Roofing Co., Ltd., 40, Trinity Square, E.C.3.
British Uralite Co., Ltd., 8, Old Jewry, London, E.C.
Engert & Rolfe, Ltd., Barchester Street, Poplar.
Excel Asphalte Co., The, Ltd., Ceslym Works, Dorset Wharf, Hammersmith, W.
Haywards, Ltd., 187-201, Union Street, S.E.1.
McNeill, F., & Co., Ltd., 4, South Place, London, E.C.2.
Vulcanite, Ltd., 118, Cannon Street, London, E.C.4.
Willesden Paper & Canvas Works, Ltd., Willesden Junction, N.W 10.

Safes—
Hobbs, Hart, & Co., Ltd., Arlington Street, N.
Tann, John, Ltd., 117, Newgate Street, E.C.

Sanitary Appliances—
Burn Brothers, 8, Blackfriars-road, S.E.
Leeds Fireclay Co., Ltd., Wortley, Leeds.
Sessions & Sons, Ltd., Gloucester.

Sashes (Steel)—
General Iron Foundry Co., Ltd., 48, Upper Thames-street, E.C.
Haywards, Ltd., 187-201, Union-street, S.E.1.
Williams, Gamon & Co., Kaleyards Works, Chester.

(Continued on next page)

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Sewage Specialists—
Burn Brothers,
9, Blackfriars-road, S.E.

Shop Fronts—
Francis, S. W., & Co., Ltd.,
66, Gray's Inn-road, W.C.

Shutters—
Francis, S. W., & Co., Ltd.,
66, Gray's Inn-road, W.C.

Stable Fittings—
Haywards, Ltd.,
187-201, Union-street, S.E.

Staircases (Iron and Steel)—
General Iron Foundry Co., Ltd.,
Brooks' Wharf, Upper Thames-st., E.C.
Haywards, Ltd.,
187-201, Union-street, S.E.1.

Staircases (Wood)—
Bullen Bros. & Sons, Ltd.,
242, Upper Parliament Street,
Liverpool, S.

Steel Lathing—
Haywards, Ltd.,
187-201, Union-street, S.E 1.

Stone—
Beer Stone Co., Ltd.,
Seaton, Devon.

Stone (Machinery for Working)—
Coulter & Co., Ltd.,
Batley.

Storage Bins—
Sankey, Joseph, & Sons, Ltd.,
Hadley, Salop.

Strong Rooms, &c.—
Bennett, James,
16, Deansgate, Manchester.
Hobbs, Hart & Co., Ltd.,
Arlington-street, N.
Tann, John, Ltd.,
117, Newgate Street, E.C.

Structural Iron and Steel Work—
Dawnay, A. D., & Sons, Ltd.,
Steelworks-road, S.W.
Dunkerley, C. C., & Co., Ltd.,
Store-street, Manchester.
Haywards, Ltd.,
187-201, Union-street, S.E.1
Henderson & Glass,
Vulcan-street, Liverpool.

Tanks, Cisterns—
Braby, F., & Co.,
Euston-road, N.W.

Terra Cotta—
Hathern Station Brick Co., Ltd.,
Loughborough.

Timber—
Jennings, C., & Co., Ltd.,
962, Pennywell Road, Bristol.
Oliver, W., & Sons, Ltd.,
120, Bunhill-row, E.C.

Typewriting—
Miss Maud Gatliff,
87, Essex-street, Strand, W.C.

Uralite—
British Uralite Co., Ltd.,
9, Old Jewry, London, E.C.

Underslating—
Dux Chemical Solution Co., Ltd.,
Hancock Rd., Bromley-by-Bow, E.3.
Willesden Paper & Canvas Works, Ltd.,
Willesden Junction, N.W.10.

Ventilating—
Hargreaves, Henry, & Sons,
Cook-street, Bury, Lancs.
Haywards, Ltd.,
187-201, Union-street, S.E.1.
Walker, P. M., & Co.,
Alexandra Works, Halifax

Waterproofing Compound—
Ironite Co., The, Ltd.,
11, Old Queen-st., Westminster, S.W
Kerner-Greenwood & Co., Ltd.,
Ann's-square, King's Lynn

Wine Bins—
Farrow & Jackson,
Great Tower-street, E

Wood Preservative—
Anderson, D., & Sons, Ltd.,
Lagan Felt Works, Belfast.
Vickers, Archibald, Ltd.,
98, King St., Covent Garden, W.C.2.

Woodwork for Builders—
Bullen Bros. & Sons, Ltd.,
242, Upper Parliament Street,
Liverpool, S.

Zinc Roofing—
Braby, F., & Co., Ltd.,
342, Euston-road, N.W

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THE KLEINE PATENT
FIRE-RESISTING FLOORS, ROOFS & STAIRCASES.
ABSOLUTE RESISTANCE TO FIRE.
Soundproof. Economical. Guaranteed.
THE KLEINE PATENT FIRE-RESISTING FLOORING SYNDICATE LTD.
A British Company. Contractors to the War Office & Office of Works
133-136, HIGH HOLBORN, LONDON, W.C. Established 1905

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SECONDHAND TIMBER
10,000 CUBIC FEET,
FOR SALE,
in all kinds of sizes; also our Stock consists of
5,000 DOORS,
WINDOWS,
STAIRS,
MOULDINGS,
SKIRTINGS;
also new timber of all kinds. (Permit required for new timber exceeding £20 monthly.)
Call and inspect all we have to offer. Send stamp for sheets, or 1/- for fully Illustrated List.
JENNINGS, LTD.,
BRISTOL.
Also small quantity stocked at Leicester and Porthcawl.

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Sankey Steel BINS in Standard SIZES

WE can supply quickly Standard Bins with compartments, 12" x 12" x 12"; six high and any number horizontally, as required, and with flat shelves (or 12" x 12" x 9" with dished shelves). Also other standard sizes.
The Bins can be supplied either assembled complete or in separate parts for assembly on the site. Write us your requirements.
Joseph Sankey & Sons, Ltd.
Wellington Shrops ire.

ROLLING SHUTTERS of every description: also INSIDE BLINDS, SPRING SHOP BLINDS, Brass, Gun and White Metal SHOP FRONTS, GLASS FACIAS, GILT LETTERS &c.
Estimates free on application to
S. W. FRANCIS & CO., Ltd.,
64-70, Gray's Inn Rd., London.
Tele. Add.: "Fenestra, Holborn, London."
Phone: Holborn 160. Estd. over 60 years.

SHOP FRONTS

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"POILITE AND DECOLITE."

FIRE-RESISTING ASBESTOS CEMENT WEATHER-PROOF.

CORRUGATED SHEETS

STANDARD TILES
15¾" × 15¾"
From 2¾ in. up to 4 in. Lap
NON-ABSORBENT

BUILDING SHEETS
4'0" × 4'0", 6'0" × 4'0", 8'0" × 4'0"
From 5/32 in. thick upwards.
VERMIN-PROOF.

TRADE MARK

ECONOMICAL Poilite PERMANENT.

MADE IN THE USUAL STANDARD SIZES.

THE LAST WAR OFFICE CONTRACT

For 3 years' supplies of Poilite was awarded to this Company, which contract also included the requirements of the British Admiralty, and over 150,000,000 square feet have been supplied to the various Government Departments for Munition Factories, Army Hutments, Aerodromes, etc.

GOLD MEDAL FRANCO-BRITISH EXHIBITION, 1908.

'DECOLITE' COMPOSITION FLOORING for Hospitals, Works, Offices, Canteens, Cottages. etc.

HYGIENIC, Tough and Hard Wearing. WARM and Elastic to the Tread. Fire-Resisting. Vermin-Proof. Damp-Proof.

For New Buildings, also for Overlaying existing *Wooden, Stone, Cement, etc.*, Floors. Quickly Laid.

'PETRONITE' COMPOSITION FLOORING, suitable for Factories, Canteens, Cottages, etc. Somewhat harder than Decolite.

DECOLITE and PETRONITE are and always have been manufactured and laid exclusively by British labour.

MOSAIC AND TERRAZO PAVINGS.

BELL'S UNITED ASBESTOS CO., Ltd.,
SOUTHWARK STREET, LONDON, S.E.

ENGLISH STEEL. JOISTS, GIRDERS, STANCHIONS, CHANNELS, ANGLES, TEES, FLITCH PLATES

ROOFS

ARCHIBALD D. DAWNAY & SONS LIMTD.
Constructional Engineers.

COMPOUND GIRDERS.

STEELWORKS ROAD, S.W.
EAST MOORS, CARDIFF,
AND AT
65, QUAYSIDE, NEWCASTLE-ON-TYNE

BRIDGES.

Telegrams—
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"DAWNAY, CARDIFF." " CARDIFF 2557
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SASHES & FRAMES
CASEMENT WINDOWS
STAIRCASES
MANTELPIECES
DOORS & GATES
PANELLING
&c.

EVERY DESCRIPTION of JOINERY in HARD or SOFT WOODS
ARCHITECTS' AND CONTRACTORS' DESIGNS
FAITHFULLY REPRODUCED WITH ECONOMY, EFFICIENCY, AND DESPATCH

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LIVERPOOL

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&c.

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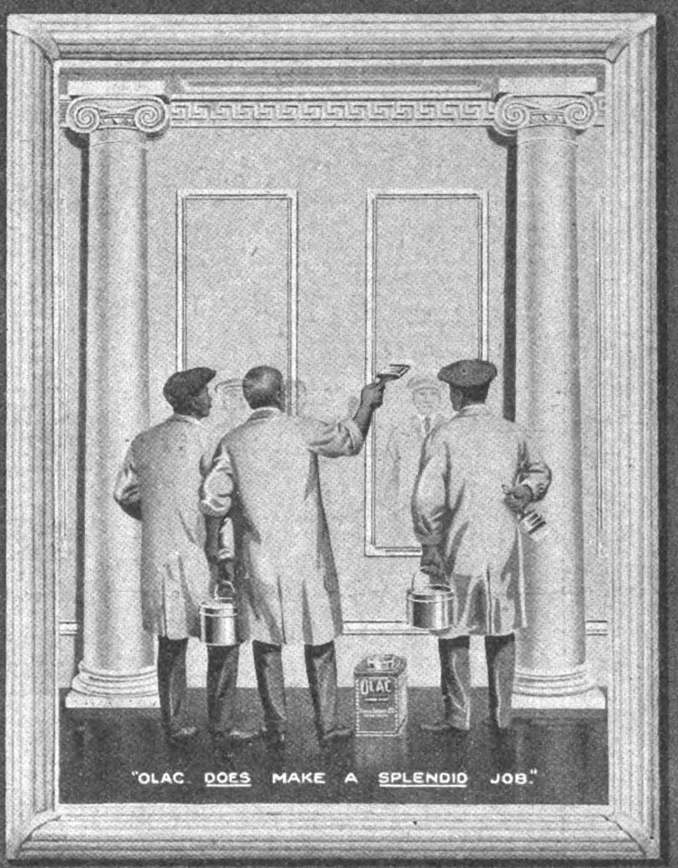
SISSONS' 'OLAC' ENAMEL



Reliable? — Yes, absolutely, and entirely British!

"OLAC" Enamel is manufactured by thoroughly up-to-date methods in White and Colours for the finest Interior and Exterior Decorative Work. It is especially suitable for Public Institutions, Schools, Hospitals, Theatres, Drawing Rooms, and smaller decorative work.

"OLAC" is also supplied in Coach Gloss Quality for Motor and Carriage Work.

Made by the Manufacturers of the famous **HALL'S DISTEMPER**—

SISSONS BROTHERS & CO., Ltd. — *Varnish and Enamel Manufacturers*, — **HULL, Eng.**

Established 1803. LONDON OFFICE: 199B BOROUGH HIGH STREET, S.E.1 Works cover 18 acres

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LATEST PRICES.

N.B.—All prices must be regarded as merely approximate for the present, as our usual sources of information are in many cases failing us.

TIMBER.

Owing to stoppage of supplies all prices have advanced considerably, and are controlled by the Director of Materials.

IRON.

Rolled Steel Joists, English.....
Compound Girders, Ordinary Sections .....
Compound Stanchions .....
Angles, Tees, Channels and Flitch Plates .....
Wrought-Iron Girder Plates ....
Steel Girder Plates .....
Steel Sheets (Single or Double) ..
Steel Strip .....
Basic Bars .....
Mild Steel Bars .....
Steel Bars, Ferro-Concrete Quality (basis price) .....

} Prices controlled by Ministry of Munitions.

OTHER METALS.

A licence must be obtained from the Director of Materials (A. M. 2 (E)), Hotel Victoria, Northumberland Avenue, S.W., and should accompany orders for quantities over 1 cwt.

	Per ton.		Per ton.
Lead Water Pipe, Town	*£51 10 0	to	—
Country	*52 10 0	,,	—
,, Barrel Pipe, Town	*52 10 0	,,	—
,, ,, ,, Country	*53 10 0	,,	—
Lead Pipe, tinned inside, Town	*54 10 0	,,	—
,, ,, ,, ,, Country	*55 10 0	,,	—
Lead Pipe, tinned inside and outside..... Town	*58 0 0	,,	—
,, ,, ,, ,, Country	*59 0 0	,,	—
Composition Gas-Pipe, Town..	*55 10 0	,,	—
,, ,, Country	*56 10 0	,,	—
Lead Soil-pipe (up to 4½in.) Town	*54 10 0	,,	—
,, ,, ,, ,, Country	*55 10 0	,,	—
[Over 4½in. £1 per ton extra.]			
Lead, Common Brands.....	—	,,	—
Lead, 4lb. sheet, English.....	51 0 0	,,	—
Lead Shot, in 28lb. bags	—	,,	—
Copper Sheets, Sheathing & Rods	168 0 0	,,	170 0 0
Copper, British Cake and Ingot	147 0 0	,,	150 0 0
Tin, English Ingots	310 0 0	,,	—
Do., Bars	186 10 0	,,	187 10 0
Pig Lead, in 1cwt. Pigs Town ..	33 12 6	,,	34 12 0
Sheet Lead, Town.....	*51 0 0	,,	—
,, ,, Country	*52 0 0	,,	—
Genuine White Lead.....	*72 10 0	,,	—
Refined Red Lead	62 10 0	,,	—
Sheet Zinc.....	144 0 0	,,	—
Spelter	93 0 0	,,	110 0 0
Old Lead, against account.....	35 0 0	,,	—
Tin .....per cwt.	15 10 0	,,	—
Cut nails (per cwt. basis, ordinary brand)	1 12 0		—

* For 5 cwt. lots and upwards.

BRICKS.

Sale, Purchase for use, of all Bricks exceeding 20,000 in number is now forbidden by the Minister of Munitions except by licence of the Controller of Bricks, to whom all applications for permits must be made at Whitehall Place, S.W., marked "Building Brick Permit."

(All prices net.)

First Hard Stocks....	£4 0 0	per 1,000	alongside, in	
Second Hard Stocks..	3 15 0	,,	,,	[river.
Third Hard Stocks ..	1 14 0	,,	,,	,,
Mild Stocks.....	2 2 0	,,	,,	,,
Picked Stocks for Facings.....	3 5 0	,,	delivered at rally. station.	
Flettons	2 10 0	,,	,,	,,
Best Fareham Red ..	4 0 0		,,	,,
Best Red Pressed Ruabon Facing....	5 15 0	,,	,,	,,
Best Blue Pressed Staffordshire	6 5 0	,,	,,	,,
Ditto Bullnose	6 10 0	,,	,,	,,

WHITE AND COLOURED GLAZED BRICKS

WHITE IVORY AND SALT GLAZED (PER 1,000).

	£ s. d.
Stretchers	17 17 6
Headers	17 7 6
Quoins and Bullnose	21 7 6

Second quality £1 per 1,000 less.

OTHER COLOURS.

	Best.	Seconds.
	£ s. d.	£ s. d.
Stretchers	23 7 6	18 7 6
Headers	22 17 6	17 17 6
Quoins and Bullnose	26 17 6	21 17 6

MOULDED BRICKS.

Stretchers and headers, 8d. each (plus 50%).
Internal and external angles, 1s. 2d. each (plus 50%).
Majolica and soft glazed stretchers and headers, £28 7s. 6d. per 1,000.
Majolica and soft glazed quoins and bullnose, £33 7s. 6d. per 1,000.
NOTE.—Above prices are in full truckloads at London Goods Station.

SAND AND BALLAST.

	s. d.	
Thames Sand	12 6	per yard, delivered.
,, Ballast	12 6	,, ,,
Pit Sand.....	12 6	,, ,,
Best Washed Sand	14 0	,, ,,

CEMENT AND LIME.

	s. d.	s. d.	
Best Portland Cement	55 0	to 58 0	Per ton, delivered.
Ground Blue Lias Lime ...	33 6	at depot.	

Exclusive of charge for sacks

	s. d.	
Grey Stone Lime.....	47 0	per ton.
Stourbridge Fireclay in sacks	37s. 6d.	per ton at depot.

STONE.

		£ s. d.
Yellow Magnesian, in blocks ..	per foot cube	0 3 9
Red Mansfield, ditto	,,	0 2 9
White Mansfield, ditto	,,	0 2 9
Red Corsehill, ditto	,,	0 2 6
Darley Dale, 1'sto	,,	0 2 5
Grienshill ditto.....	,,	0 2 4
Closeburn Red Freestone, ditto	per foot cube	0 2 2
Ancaster, ditto	,,	0 2 10
Chilmark (in truck at Nine Elms)	,,	0 1 10½
Hard York, ditto	,,	0 3 10
Do. do. 6 in. sawn both sides landings, random sizes	per cot sup.	0 3 3
Hard York, 3 in. slab sawn two sides, random sizes.....	per foot cube	0 1 3

OILS.

Rapeseed, English pale,	per tun	£28 15 0	to £29 5 0
Ditto, brown	,,	26 15 0	,, 27 5 0
Cottonseed, refined....	,,	29 0 0	,, 30 0 0
Olive, Spanish	,,	39 10 0	,, 40 0 0
Seal, pale.....	,,	21 0 0	,, 21 10 0
Coconut, Cochin	,,	46 0 0	,, 46 10 0
Ditto, Ceylon.....	,,	42 10 0	,, 43 0 0
Ditto, Mauritius	,,	42 10 0	,, 43 0 0
Palm, Lagos	,,	32 5 0	,, 33 5 0
Ditto, Nut Kernel.....	,,	35 0 0	,, 35 10 0
Oleine	,,	17 5 0	,, 19 5 0
Sperm	,,	30 0 0	,, 31 0 0
Linseed Oil.....	per gal.	0 8 7	Controlled.
Baltic Oil.....	,,	—	,,
Turpentine.....	,,	0 11 3	,, ,,
Putty (Genuine Linseed Oil)	per cwt.	1 6 0	,,

TILES.

	s. d.		Dlvrd. at
Plain red roofing tiles.....	62 6	per 1,000	ry. sn.
Hip and Valley tiles.....5s. to	9 0	per doz.	,,
Broseley tiles	75 0	per 1,000	,,
Ruabon red, brown, or brindled ditto (Edwards)	77 6	,,	,,
Ornamental ditto	80 0	,,	,,
Staffordshire (Hanley) Reds or brindled tiles	75 6	,,	,,
Hand-made sand-faced	80 0	,,	,,
Hip tiles .... 5s. to	9 0	per doz.	,,
Valley tiles ..... 5s. to	9 0	,,	,,

SLATES.

		Per Mille of 1,200.
Best Welsh Blue (Portmadoc) Slates	24 by 12	£32 2 6
,, ,,	20 ,, 10	20 10 6
,, ,,	18 ,, 10	15 17 6
,, ,,	16 ,, 8	10 7 0

Minimum prices for Portmadoc Slates delivered within cartage limits.

Size.	In ½m. Lots.	In ½m. Lots. Over ¼ and not exceeding ½m.	In 1m. Lots. Over ½ and not exceeding m.
Inches.	£ s. d.	£ s. d.	£ s. d.
24 by 12	36 0 0	34 0 0	32 2 6
22 by 12	28 10 0	26 12 6	25 5 0
22 by 11	26 10 0	24 7 6	23 0 0
20 by 12	26 10 0	24 2 6	22 12 6
20 by 10	23 12 6	22 5 0	20 10 0
18 by 12	20 10 0	19 15 0	18 5 0
18b y 10	18 2 6	16 12 6	15 17 6
18 by 9	16 10 0	14 17 6	14 0 0
16 by 12	17 7 6	16 0 0 ..	15 2 6
16 by 10	15 15 0	14 0 0	13 2 6
16 by 9	13 10 0	12 7 6	11 10 0
16 by 8	12 2 6	11 5 0	10 7 6
14 by 10	12 10 0	11 15 0	10 15 0
Damp Course.			
18 by 9	13 0 0	12 0 0	11 0 0
14 by 9	12 0 0	11 0 0	10 0 0
12 by 4½	4 15 0	4 5 0	3 15 0

Note. Bangor Slates:—
24 by 12 to 20 by 10 .. 15s. per m. extra.
20 by 10 to 14 by 10 .. 10s. ,,

Where quotations for slates are not obtainable at present architects and builders will do well to specify and use some of the excellent substitutes which have found favour of late. Prices of some of the best of these are as follows:—

ASBESTOS ROOFING TILES, supplied by the British Uralite Co., Ltd., 8, Old Jewry, London, E.C. From £4 14s. per 1,000, 9 in. by 9 in., 400 tiles per square of roof covered, price per square, 87s. 8d., to £33 8s. per 1,000, 24 in. by 24 in., 84 tiles per square of roof covered, price per square, 22s. 8d.

ALLIGATOR ROOFING, supplied by the British Roofing Co., Ltd., 40, Trinity Square, E.C.3, in rolls of 216 feet super, with the necessary mastic and nails for fixing: 1 ply, 20s. 6d. per roll; 2 ply, 26s. 6d. per roll; 3 ply, 34s. 6d. per roll.

"POILITE." Made by Bell's Asbestos Co., Ltd., Southwark Street, S.E. Standard tiles in red, blue, and grey colours, carriage paid to nearest railway station, 15¾ by 15¾:—Red, £14 3s. 3d. per 1,000; grey or blue, £12 15s. per 1,000. Approximate prices per square, fixed complete to roof-boards or battens:—Red, £1 10s. 9d.; grey or blue, £1 8s. 9d. At present above prices are subject to a premium of 17½ to 33⅓ per cent. in consequence of rise in prices of material and other war exigencies.

ROK ROOFING. Made by D. Anderson and Son, Ltd., Lagan Felt Works, Belfast, and Roach Road Works, Old Ford, London, E. Prices and particulars in new booklet "V," to be had on application.

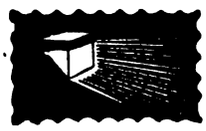
LION ROOFING, in rolls, 24 yds. by 1 yd. Manufactured solely by F. McNeill and Co., Ltd., Roofing Felt Works, Bunhill Row, E.C., and Kirkintilloch, N.B., etc. Lowest current prices and Lion Roofing pamphlet free on application to F. McNeill and Co., Ltd., 4, South Place, London, E.C.2.

GLASS (IN CRATES).

English Sheet Glass	15 oz.	21 oz.	26 oz.	32 oz.
Fourths.....	7d. ..	8d. ..	9d. ..	10d.
Thirds	7½d. ..	8½d. ..	9½d. ..	10½d.
Fluted Sheet	7½d. ..	8½d. ..	— ..	—
Hartley's English Rolled Plate	⅛ in. 5½d. ..	¼ in. 6d. ..		⅜in. 6½d.
	White.			Tinted.
Figured Rolled	6½d. ..			7½d.
Repoussine	6d. ..			7d.
Rolled Sheet	6d. ..			—
Stippolyte	6½d. ..			7½d.

At a public vestry held in the schoolroom, Osbaldwick, York, it was decided to build a reading and recreation room as the village war memorial at an estimated cost of £450.

Use HAYWARDS LIGHTS and Building Specialities.



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Have Daylight and Fresh Air, and clean, bright places.

Haywards Steel Roofs and 'Reform' Puttyless Glazing.

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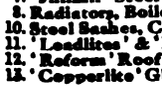
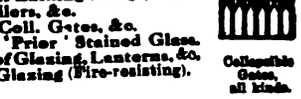
11. 'Leadlites' & 'Prior' Stained Glass.
12. 'Reform' Roof Glazing, Lanterns, &c.
13. 'Copperlite' Glazing (Fire-resisting).

Collapsible Gates, all kinds.



Self-Locking Coal Plates and Rings.



Ventilators (for Rooms and Roofs).

HAYWARDS, Ltd.,
UNION ST., BORO', LONDON, S.E.1 Tel., Hop 2643

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CHURCH & PUBLIC CLOCKS

Makers of Clocks and Chimes for St. Paul's Cathedral, Beverley Minster, Truro Cathedral, Thurles Cathedral, Belfast Assembly Hall, and many others to Lord Grimthorpe's designs.

In 1897, writing to Vicar of Minchinhampton, Lord Grimthorpe said: "Smith, of Derby, will clock you in the best way, and as near eternity as possible."

GOVERNMENT SURPLUS STORES FOR DISPOSAL.

The Ministry of Munitions wishes to DISPOSE of a number of Wooden and Metal SERVICE PACKAGES, the majority of which are suitable for Trade purposes. The packages are well made, and stocks are held of a great variety of sizes. Some of the packages have fittings and attachments, but the Ministry may be able to have these removed from the packages to suit intending purchasers; preferably they will be sold with such fittings as may be attached at the time of sale.

Particulars as to where samples may be seen, etc., may be obtained on application to—

THE CONTROLLER OF MUNITIONS (Timber Supplies), 28, Northumberland Avenue, W.C.2.

CLARKSON'S
SECONDHAND OPTICAL MART,
338, High Holborn, W.C. (Opposite Gray's Inn-rd.
Secondhand Theodolites, Levels, Drawing Instruments.
WE LEND ON HIRE. WE BUY GOOD INSTRUMENTS.

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Peace

HOW will it find you? Prepared—as well as it is possible to prepare under present conditions—to do your share of the waiting work?

—Conservative stocks of available material on hand with which to commence operations?

—Substitutes in stock where standard materials are unobtainable?

—Or are you waiting the event—satisfied to join the peace time queue?

Lewis Berger & Sons, Ltd.,
Makers of Colours, Paints and Varnishes,
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Be Prepared.

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By Order,
C. COLE,
Clerk to the Council.
Town Hall,
Earlestown, Lancs.
17th December, 1918.

NORTHERN Borough Requires the services of a qualified ARCHITECTURAL ASSISTANT, capable of taking charge of Housing Schemes under the supervision of the Borough Surveyor. Applicants should have good practical experience in the preparation of plans, specifications, quantities, and estimates, and possess a sound knowledge of building construction.—Application, stating age, qualifications, previous experience, and salary required, to be sent, with copies of not more than three recent testimonials, by the 3rd January, 1919, to NORTHERN, BUILDING NEWS Office, Effingham House, Arundel Street, Strand, W.C.2.

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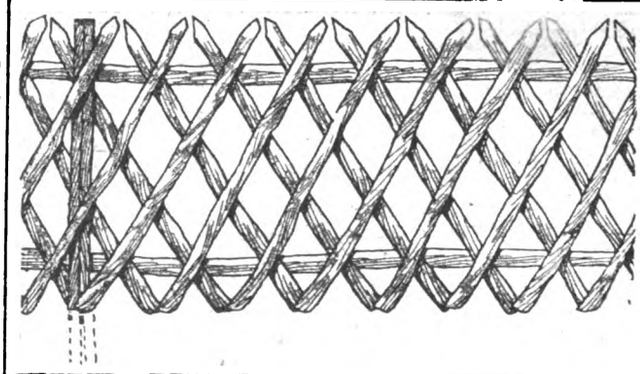

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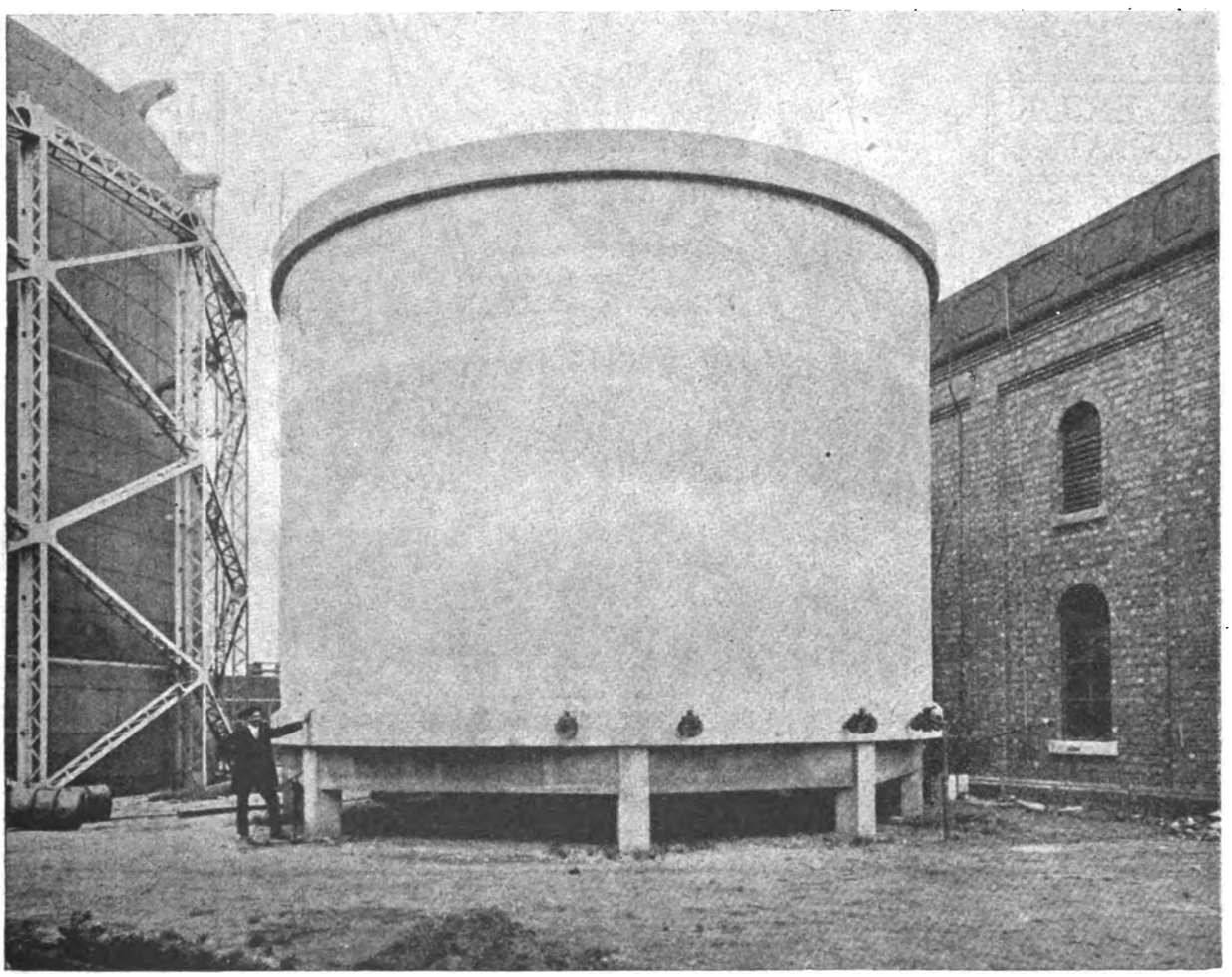

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